

Marine Corps Gazette

MAY 1958
FORTY CENTS



Marine Corps Gazette

MAY 1958

NUMBER 5

VOLUME 42

Published by the Marine Corps Association in order to provide a forum for the expression of matters which will advance knowledge, interest and esprit in the Marine Corps

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Marine Corps
Gazette



MARINE CORPS AVIATION'S 46th ANNIVERSARY will be celebrated this month. Three articles in this issue will be of particular interest to aviation personnel: *Our Friend the Helicopter*, *The Best Defense* and *Engineer Support to Marine Corps Aviation*.

In addition to taking a striking photograph, we feel that the individual who took this month's cover picture captured the feeling of precision and teamwork, between air and ground units, which makes the Marine Corps the envy of all professional military men. The disciplined precision shown in this picture is only achieved: when air and ground units are *completely* familiar with each other's capabilities; after rigorous and repeated training.

PUBLISHED MONTHLY BY THE MARINE CORPS ASSOCIATION

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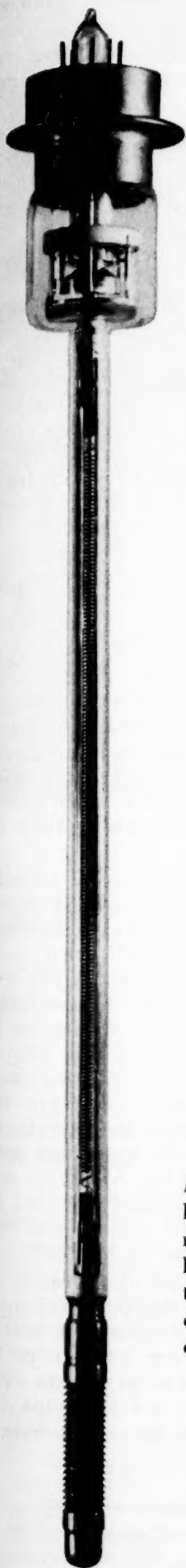
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A GREAT AMPLIFIER TUBE IS PERFECTED FOR TELEPHONY

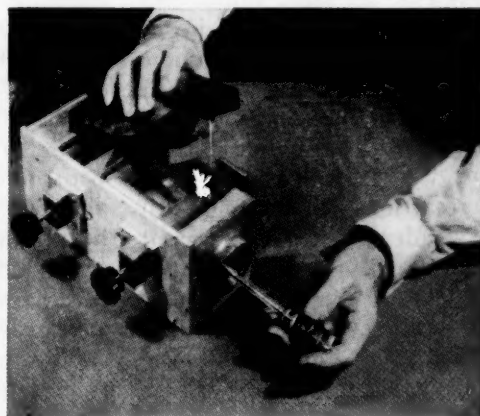
A new transcontinental microwave system capable of carrying four times as much information as any previous microwave system is under development at Bell Telephone Laboratories. A master key to this development is a new traveling-wave tube of large frequency bandwidth.

The traveling-wave amplifying principle was discovered in England by Dr. Rudolf Kompfner, who is now at Bell Laboratories; the fundamental theory was largely developed by Labs scientist Dr. John Pierce. Subsequently the tube has been utilized in various ways both here and abroad. At the Laboratories it has been perfected to meet the exacting performance standards of long distance telephony. And now for the first time a traveling-wave tube will go into large-scale production for use in our nation's telephone system.

The new amplifier's tremendous bandwidth greatly simplifies the practical problem of operating and maintaining microwave communications. For example, in the proposed transcontinental system, as many as 16 different one-way radio channels will be used to transmit a capacity load of more than 11,000 conversations or 12 television programs and 2500 conversations. Formerly it would have been necessary to tune several amplifier tubes to match each channel. In contrast, a single traveling-wave tube can supply all the amplification needed for a channel. Tubes can be interchanged with only very minor adjustments.

The new amplifier is another example of how Bell Laboratories research creates new devices and new systems for telephony.

Left: A traveling-wave tube. *Right:* Tube being placed in position between the permanent magnets which focus the electron beam. The tube supplies uniform and distortionless amplification of FM signals over a 500 Mc band. It will be used to deliver an output of five watts.



Bell Telephone System





LPM Drill vs New Drill

... The purposes of adopting the New Drill are fivefold: to restore disciplinary features, smartness, precision, improve mental alertness of participating personnel, and last develop leadership and command presence in junior officers and NCOs.

Now, we come to the crux of LPM versus New Squad's Drill. First, we must ask ourselves this: to what degree have the objectives of the drill been accomplished? If not, what specific recommendations can be furnished for changes or improvements? This is easy—throw the new drill out the window and return to the LPM drill, because the reason or reasons will be outlined to you as you read this.

Dissenters, already, well for the sake of argument, let's delve into specific recommendations, assuming we keep the new drill.

First, we know from experience that the distance in the squad's drill appears to generate involved and difficult movements. The number 1 man in the first squad, first rank learns the movements of the number 4 man first squad, first rank and in due time the movements of the number 2 and 3 of the same squad and rank. What happens when he is made number 1 of the second rank? The process of learning starts all over again. Smartness and precision are lost. We could go on to the third rank, but we would get the same answers, smartness and precision are lost and leadership and command presence dimmed.

This brings us to a point in question. How can these things that we lost be retained? Simple. Keep the man in the same rank, same squad, until he either becomes a squad leader or gets discharged. At times this

is difficult because the troops are assigned to working details, some go to sick bay, etc.

Let's go into the mental alertness of participating personnel. It is aggravated when you change a man from one rank to the other, because he no sooner learns an evolution than he starts to learn a new one, "break out the slide rules, men, here we go again."

Under the LPM drill this does not occur, because the man knows what to do no matter what number man or rank he falls in.

On the subject of recommendations let's go a little further, delete the "Right Front Into Line" and "On Right Into Line." These movements can be accomplished by column movements, a Squad's Right or Left, as appropriate. No doubt the primary reason for Right Front Into Line and On Right Into Line was to develop leadership and command presence, but isn't drilling the squad far better than going along with the crowd and uttering or muttering commands the troops know are to occur and in the direction they are to move.

Granted there are units that have mastered this drill, but looking more closely you will find these are parade ground units. Units that don't have a heavy turnover of personnel. Units that don't have more important things to learn. For example, FMF Units have the all-important mission of being combat ready, they have a heavy turnover of personnel and train personnel for combat; it is perplexing to saddle them with the mission of learning a New Drill.

The learning of the new drill should be allocated to units whose primary mission is ceremonies. That leaves no doubt as to what units

should become proficient in this new drill.

LPM drill is easier to learn and by far easier to retain; the new drill is neither.

A commander uses drill to move his unit from one place to another in a standard orderly manner. In the event of war the teaching of drill will become more complicated, due to the fact that the recruits will have to learn the new drill before they can be moved from one place to another in a standard and orderly manner. It seems more time will be spent teaching drill than the other more necessary wartime activities. With LPM drill this poses no problem, as long as the recruits are taught right face, left face, forward march and halt. The unit is moved in a standard, orderly manner.

SSgt R. C. Alvarez

Hq Co, Hq Bn
MCS, Quantico, Va.

New Drill vs LPM Drill

... I have just finished reading 2dLt Bleiweiss' letter to Message Center (GAZETTE: Feb '58). I don't believe that the new drill is hardening in the FMF arteries at a tender age. I do believe that not enough has been injected to bring about this condition.

I would like to offer the following suggestions to the matter of the new drill. The first one is let's not fight the problem; the drill is here, accept it, learn it and put it into practice on the drill field. The Lieutenant mentioned that only a segment of the Marine Corps is receiving adequate instructions and application principles. Every Marine who has received recruit training in the past year has received excellent instruction in the new drill; he has had team drill, squad drill, platoon drill and has participated in parades and ceremonies all using the new drill.

I don't believe the problem lies with the Pvs, Pfc's and a majority of the new Cpls because they have received instruction and can do the drill. I believe it lies with the senior NCOs who do not know the drill and won't take the time to learn it,

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The GAZETTE will pay \$5.00 for each letter published in Message Center

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Cat D9 Tractor with No. 9 Ripper and 'dozer attachments helps clear radar site atop Judith Mts., near Lewistown, Montana

MOUNTAIN-TOP RADAR SITE CLEARED—"ON THE DOUBLE"

15,000 cubic yards of cyanite rock excavated in 72 hours

The U. S. Army Corps of Engineers was requested by the Air Force to build a Radar Station 1,800 feet atop rocky Judith Mts., Montana. The Air Force didn't care how it got there—only that it got there and in a hurry.

Parker, Schram and Dack Construction Company, Milton-Freewater, Oregon, got the message from the Engineers, and went right to work.

In order to excavate and clear the site, a granite-type rock, cyanite, had to be loosened and removed. In hopes of eliminating the extra expense of "shooting" the rock, a Caterpillar D9 Tractor, equipped with a No. 9U Bulldozer and a No. 9 Ripper, was brought in. Utilizing the weight of the big 30-ton D9, the exclusive "Hi-Electro" hardened steel ripper teeth managed to handle 98% of the cumbersome rock, reducing the "shooting" operation to a negligible two per cent. In just two 8-hour shifts, a radar

site, 50 feet in diameter and 5 to 6 feet deep, was cleared.

In addition to the site-excavation, 6 miles of a 20-foot access road, from cantonment to the mountain top, were ripped, 'dozed and made accessible. Here's what Wm. L. Hart, Supt., has to say about the No. 9U Bulldozer with Hydraulic Tilt Cylinder attachment: "The tilt 'dozer is a wonderful thing. It moved material for fill as far as nine hundred feet." As for the 320 HP (flywheel) D9 itself, Supt. Hart sums up: "It's a good machine."

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**HELPING TO KEEP
AMERICA PREPARED**

(Continued from page 2)

and so they do not use it. This is not a drill that can be taught only during the time allotted for it on the training schedule. The Pvs have the advantage because they had it taught to them by the DI. The NCOs are going to have to learn it by cracking the book at night. The officers can help by being able to explain any problems that arise from reading the book. This drill has to be committed to memory if we are ever to do it on the drill field. The NCOs are going to have to teach the drill and so it can not be blamed on poor instruction if he knows it and above all knows how to instruct. The Lieutenant said that unfamiliarity is the result and the cause of much negative comment in the ranks. This can be done away with by becoming familiar with the drill.

It does not take 200 hours to learn this drill and be able to teach it. I believe a DI receives around 96 hours of drill while going to DI's school but he learns the drill on his own time studying each evening and during drill period he applies it and asks questions about what he doesn't understand. But he still commits it to memory on his own time in the evenings. An 8 hour a day Marine will never learn the drill if his only interest in it is during the period allotted on the training schedule. It is the individual Marine's responsibility to learn the steps that go along with his position in the squad. These he has to commit to memory and this is up to him to do. He can do it while in the chow line or in the evening—even on a 10-minute break. He does not need the whole squad there to practice his steps; these can be done by one's ownself. During drill periods it is going to be up to the NCOs and officers to iron out the rough spots, and to do this they must know the drill. Run through the movements by the numbers (everybody counting) and work up to doing it at normal cadence. Here is an opportunity to build up the prestige of the NCO that has been an issue these past months. Platoon Leaders, platoon sgts, squad leaders and fire team leaders each leading and instructing in that part of the drill that pertains to his unit. If a man cannot drill a fire team, how can he be made a squad leader, and so on up?

If a Marine complains that he cannot learn his steps because there is not enough time allotted on the training schedule, should we sit down and agree with him or should we point out that a little time of his own should be spent learning the steps by heart and that when he has a spare moment that he might try walking through his steps? The NCOs should be able to answer the questions his men ask about the drill. The answers can be found in the drill manual that has been published. Practice in the drill can be increased by using it constantly, marching to all classes, to and from the tank park and on working parties using the new drill. At first we may look like raw recruits before their first training day, but then again recruits marching during their last few weeks are a darn sharp unit. The same results can be achieved in the FMF if the new drill is accepted. In closing, I would like to say let's not fight the problem, let's work with it—first commit the drill to memory and let's do it at all formations and before we know it this drill will be second nature. And those who date back to the "Old Corps" will proclaim that we are second to none on the drill field and they'll be the first to proclaim, "Damned if the Marine Corps didn't write its own drill for foot troops."

SSgt W. D. Lohan

Marine Corps Recruiting SubStation
Decatur, Illinois

Defense of the MOS System

... Although I have written some articles for the GAZETTE during the past several years, I have never felt compelled to write any comments regarding articles published in this fine magazine. However, in the February 1958 issue you published an article entitled "Privates for General Service" by Capt T. K. Thomas, which seems to "rub me the wrong way."

The first impression I had when I read this article was "The Captain is obviously against progress and manpower economy!" However, after reading the article again, I realized that the author was concerned primarily with the importance of a leader's responsibility of personal contact with the personnel in his charge. On this point, I agree wholeheartedly with him but I disagree with the implication that the man-

ner in which to achieve this goal is to turn back the time to pre-classification days in the Marine Corps.

Capt Thomas leaves me with the impression that he is laboring under the illusion that personnel classification, or the MOS System as he calls it, is a present-day Marine Corps goal rather than a tool to be used in achieving a goal—the goal of maximum manpower efficiency and economy with a minimum of lost motion.

Whenever the Marine Corps accepts a young man for enlistment, the Corps is making an investment. It is only good business practice to attempt to make that investment pay off at the highest possible gain. The gain in this type of investment is the services rendered by the individual. What could be a better way to reap the maximum gain on this investment than to discover the individual's capabilities and experiences right at the beginning of his career and capitalize on them? I agree that these talents would eventually reveal themselves whenever the individual is exposed to a situation which calls for his skills. But why waste time by sending him to a communications platoon only to find that he should have been assigned to an artillery unit or to an electronics school to fully develop and utilize his skills? It's not only a waste of time and manpower, but it is also an insult to the individual to be assigned a job which does not fully utilize his capabilities.

The importance of a leader's responsibility to know his men cannot be overlooked and the problem does need attention in many commands. However, to put the Marine Corps' personnel system into exile does not seem to offer the most logical solution to this problem. The solution is up to each leader, from the squad leader on up to the highest command. It is up to us to maintain this personal contact by showing a genuine interest in the individual's work, recreation and personal problems. Too many of us have the habit of entombing ourselves in our offices or other cubby-holes from which we operate at 8 o'clock in the morning only to see daylight again at quitting time in the evening. Occasionally we are resurrected from this tomb whenever something goes wrong during the day on the jobs for which we

(Continued on page 6)



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(Continued from page 4)

are responsible. Thus our men see us only at a time when we are irritated and under these circumstances, the leader never gets to really know his men. He must also come forth from the inner sanctum frequently to display his better personality and to see how WELL the men perform their duties, to offer them encouragement, pay them deserved compliments and generally build up in his men a feeling of sincere good will. It is only after this feeling of mutual trust and confidence has been established that our men will feel free to come to us with their problems and it will be through this method that the leader gets to know his men.

So I say, why founder in the abyss of the unknown by crucifying the MOS system just to achieve one of the phases of leadership by forcing it upon our leaders? This is just another "do it yourself" project which each of us must undertake.

SgtMaj C. J. Evers

I&I Staff, 25th Rifle Co., USMCR
NAVMCRTC, Gary, Ind.

The French in Indo-China

... I have read with particular interest Maj David Riley's article (GAZETTE: Feb '58) "French Helicopter Operations in Algeria." There has been a good deal of valuable information published in *Aviation Week* on the same subject but it has been slanted toward the exclusively technical reader rather than toward the student of military affairs.

Having served with the French Air Force myself during the ill-starred Indo-China campaign, I feel something of a proprietary interest in their present campaign, which they appear to be waging more effectively than the campaign against the Viet-Minh. They have a long way to go before it can be said that they have realized the full effectiveness of military aviation as a supporting arm. As Maj Riley indicates, this is by no means due to any lack of proficiency or of esprit on the part of personnel units (either ground or air), but rather to a lack of staff planning and tactical coordination, and, more basically, to a lack of popular (and therefore of political) support of the French Armed Services by the nation and by its government at the moment.

I would take issue with Maj Riley on only one point: first of all, he is in error in describing the "Mistral" as a "single engine jet fighter of French design." It is of French manufacture, but the design is British to quote *Jane's All the World's Aircraft*: "a development of the (de Havilland) Vampire." This is a minor point, and not the one I wish to argue. He goes on to speak of its "prohibitive speed in strafing runs" which "makes it of doubtful value." If this statement is accepted, then our present VMA Jet equipment (F9F, F2H, and A4D) must also be "of doubtful value." I doubt if anyone is going to accept this conclusion. The advantages of jet aircraft in close air support far outweigh their shortcomings if they are properly employed. The thing the French have never had is effective tactical air control, and if they have found the "Mistral" "of doubtful value" it is due to the same shortcomings in their tactical control of aircraft which were so forcibly brought home to those of us who participated in the support and re-supply of the French Union Garrisons in Indo-China.

We Marines sometimes tend to take our own excellent tactical air control system for granted, but anyone who knows how Marines accomplish close support, resupply, and evacuation of wounded and who has ever been involved with people who were trying to accomplish these things without such a system knows full well how discouraging it can be.

Capt J. M. Verdi

MARTD MARTC NAS
Glenview, Illinois

Reporting

... A young Marine lad came rushing into the guard house at 2357 one evening all excited, shouting, "Sarge, I have just 3 minutes left to report to the General; the sentry at the gate told me to report here."

I said, "Take it easy, son, and let me see your orders." He showed them to me; sure enough they read to report to the Commanding General not later than 2400 that night.

I looked up at him and said, "Son, during my many transfers I also have received orders to report to the Commanding General, but never have. This is a policy that has been going on for a long time. I am sure the

General would not want to be disturbed at this hour because you are just reporting in to this post for duty."

I signed his orders and logged him in at 2357 and assigned him billeting and messing facilities for the night.

He left scratching his head and muttering, "I wish they would make up their minds; if my orders read to report to the General it seems to me I should report to the General, because in Boot Camp they taught me to always carry out orders."

It seems to me it would be very embarrassing if one of these days or nights some young Pfc goes knocking on the Commanding General's door and hands him a set of orders. The man will be right, because that is the way his orders read.

Let's correct this phrase by stating, "Report to the Commanding General's representative." It is my opinion that any member of the Guard after working hours is the CG's representative. During working hours the post SgtMaj or his staff.

MSgt S. Guido

MCSC, Albany, Ga.

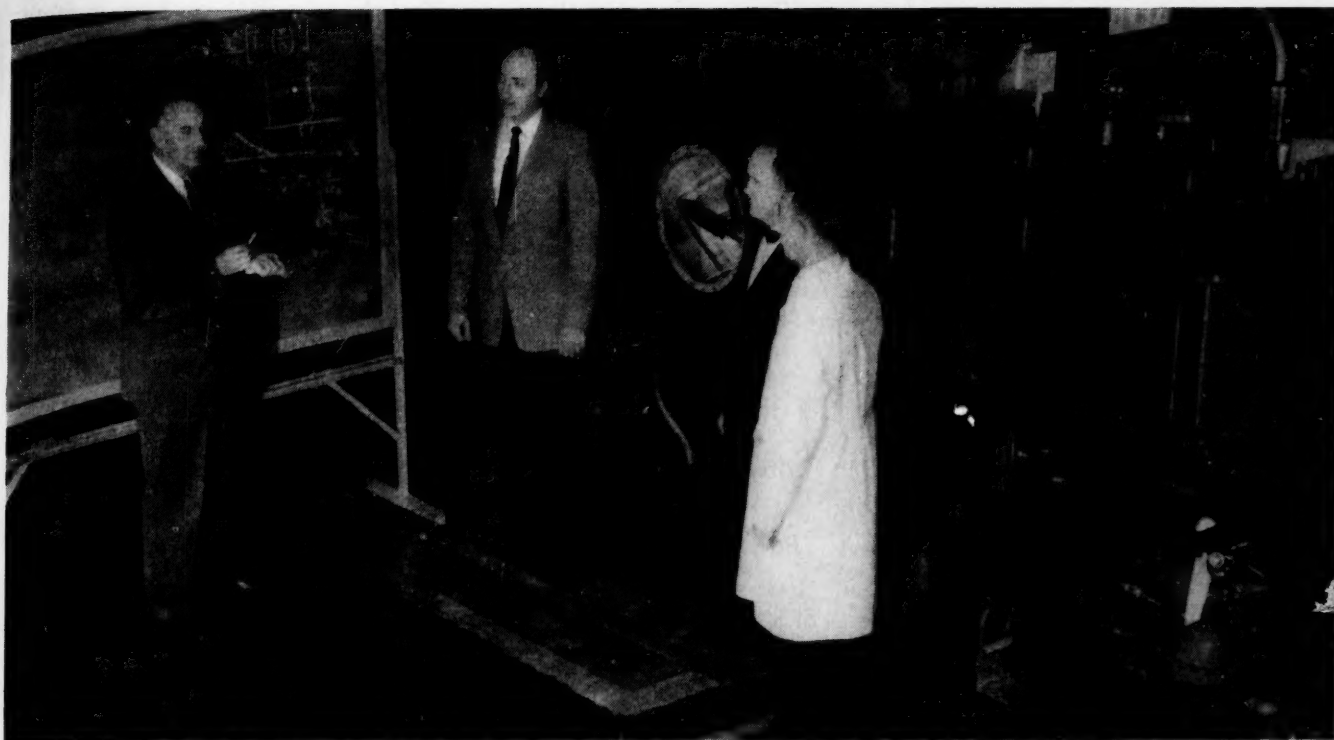
Machine Age

... I read an article in the *Washington Post* which described the plight of a man who attempted to buy a hamburger with a slice of tomato. The waitress refused to sell him one as it was against the rules. This individual left without making a purchase and wrote to the head of the concern reporting the incident and requesting an explanation.

He received a nice reply with the explanation that the organization accomplished their accounting with IBM machines. Since the machine was only capable of recording a limited amount of information, the waitress could not add a slice of tomato to his hamburger without upsetting the entire accounting system.

This brought to my mind the cover of an issue of *Newsweek* which I had noticed a Marine Captain reading. While I don't recall the exact wording, the heading on the cover read something like this: "Why are Good Men Leaving the Service?" Immediately below was the picture of a rifle with a fixed bayonet. The rifle was muzzle down with the bayonet stuck in the ground. Under-

(Continued on page 8)



Dr. H. H. Kurzweg, pioneer German rocket scientist who is now Associate Director for Aeroballistics at NOL, interprets nose-cone data obtained in supersonic wind tunnel test.

U. S. Navy Photo

FROM UNDERSEAS TO OUTER SPACE—WEAPONS OF THE NAVAL ORDNANCE LABORATORY GUARD OUR FREEDOM

Basic and applied research—and the development of advanced weapons for underwater, surface and air warfare—are the vital missions of the U. S. Naval Ordnance Laboratory near Silver Spring, Md.

Established in 1918 as a small experimental group to design sea mines and fuzes, NOL has become one of the nation's most respected institutions for military research and development. Three thousand persons, including 1,000 scientists and engineers, work at its modern \$50 million facility.

In its forty years, the Laboratory has made many notable contributions to science and technology, and to our national defense. In World War II, NOL-developed sea mines helped to strangle Japan's supply system. More recently, NOL's work on TARTAR, TERRIER and TALOS greatly speeded the development of these needed missiles. The atomic depth charge weapon BETTY, conceived and perfected by NOL in less than five years, now provides the U. S. Fleet a massive defense against modern enemy submarines.

Today, NOL's work embraces virtually the entire field of advanced weapons design. One highlight is the

Laboratory's present key role in the development of POLARIS, the nuclear-capability missile that our submarines will soon be able to launch while submerged off enemy shores. This is one of many new weapons that NOL is developing or assisting with at present—weapons that are needed if the free world is to survive.

But in the long run, some of NOL's other work in basic and applied research may be of even more significance to mankind. For example, the advanced aeroballistics studies carried on at NOL, which already have solved some of the IRBM and ICBM problems, may help unlock the remaining doors to interplanetary space travel. Or NOL's work in advanced chemistry may provide entirely new and better types of metals, plastics and other substances. Or NOL's basic research in physics and mathematics may furnish a key to the internal structure of subatomic particles, and open up whole new worlds for science and mankind.

Thus the Naval Ordnance Laboratory aids our nation in two ways: by developing weapons that will insure the survival of freedom, and by finding new scientific knowledge that will enrich our lives.

8.7

This is one of a series of ads on the technical activities of the Department of Defense.



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(Continued from page 6)

neath the rifle were the words "Fed Up."

The hamburger incident was identical in many respects to the complaints and gripes that I have heard from so many officers and enlisted men in recent years. In other words, in this age of mechanization, we have become slaves to the IBM machines. So much so, that the machine dictates our daily operations and precludes the use of common sense to overcome simple problems that arise in day to day work. In the field of supply, this is particularly exasperating. For example, if a repair part is urgently required and the accountable card is at the Data Processing Installation for accounting action, issue of that part cannot be made without upsetting the entire routine of the accounting office. As a result, one must wait until the card comes back for issue action to be taken. What are the end results? The CO is angry at the maintenance officer because the vehicle is on deadline. The maintenance officer is angry at the supply officer because he hasn't issued the repair part. The supply officer is angry with the supply depot because they haven't issued him the part, and the mechanic who does the repair work is frustrated because he cannot get the necessary part to enable him to do his job. Is this a simple matter that can be brushed off? We have 3 officers and 1 enlisted man that are unhappy and frustrated because a job isn't done, and 1 vehicle is on deadline. Why? All because we have become slaves to a machine. These incidents are not isolated — they happen every day.

The same thing takes place in personnel accounting. The machines dictate when and where you will be transferred and affect every aspect of a serviceman's life. It has regimented our thinking in the field of human relations. It has become common in personnel management and disciplinary cases to hear an officer or Staff NCO say, "The book says," instead of applying the regulations to the particular incident and individual at hand. Surely rank carries the responsibility to use judgment, common sense, experience and humility in our day to day operations and in handling personnel.

Please don't misunderstand — I

feel that the IBM machines are wonderful and have improved our efficiency in all fields. However, I do feel that we should be the master, not the machine. We need to rapidly regain the "Can Do" spirit, and once again instill in our officers and men the sense of belonging and the feeling that they are of primary importance to the branch of the service they are serving in. Until we do, our fine young men will continue to leave the service "Fed Up" just the same as the man who left the restaurant without buying a hamburger because the IBM machine said he could not have a slice of tomato with it. Little things? Yes, but we are dealing with men — not machines.

Capt E. W. Haughey

8th Eng Bn, FMFLant
Camp Lejeune, NC

Boil It Down

... Re Capt Van Cleve's "Recruiting letter (GAZETTE: Feb '58) Observation Post: The Captain (in many words) is so right. Boiled down, it's just this: Before pointing a finger stop to consider that doing so you will have three fingers pointed toward yourself. Then, ask yourself, "What am I doing about it?"

LtCol C. E. Walker

Marine Barracks, USNS
Navy No. 103, FPO, NY

Guerrilla and Psychological Warfare

... Dr. Atkinson's article on Communist Guerrilla Warfare (GAZETTE: Jan '58) was most enlightening. Having completed the Army's Special Forces School at Fort Bragg, I have a deep respect for the ever increasing importance of this often overlooked type of warfare. Dr. Atkinson hit the nail on the head throughout his article. Guerrilla and psychological warfare are far more important than most people realize, and the Communists have an immense jump on us in this unconventional warfare.

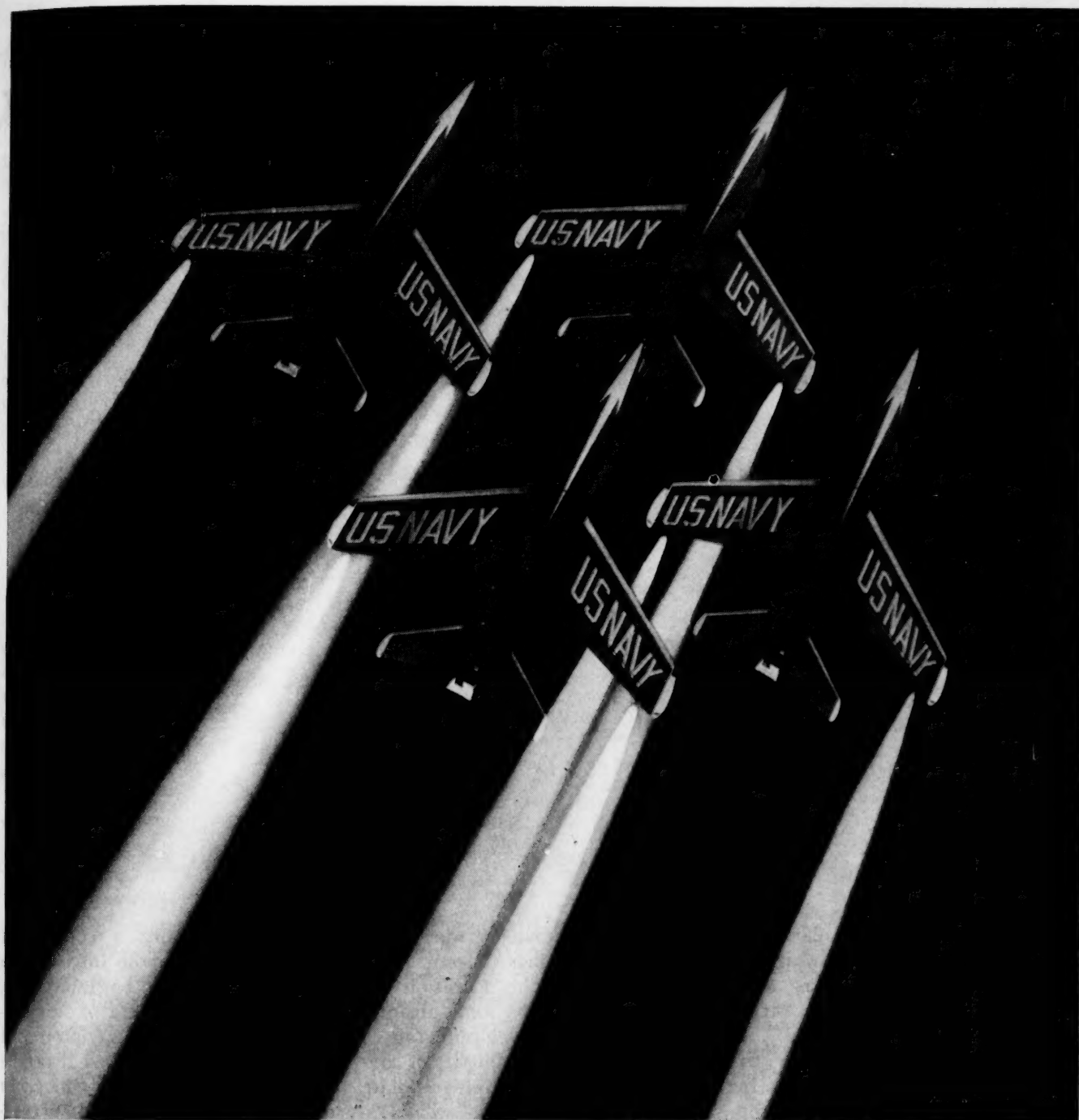
Atomic warfare increases the importance of this type of warfare through 1) emphasis on dispersion and 2) the probability of limited, rather than total war.

I wish everyone concerned with military strategy or tactics could read this article.

1stLt R. O. Price

1st Mar Div, FMF
Camp Pendleton, Calif.

Marine Corps Gazette • May 1958



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✻ Out of the greying darkness, over the rim of the sea, the whirring wings of assault helicopters sigh busily as they rush their cargo along. Hugging the sea and the ground they dart inland, hover for a moment and return to the sea in a continuous stream of motion. The Marines are landing again; over and around the beach defenses as if guided by invisible strings stretching from seaward.

We are rapidly gaining the developmental momentum that will one day give rise to the actuality of employing the hundreds of helicopters performing thousands of daily sorties which will make this version spring to life when we are again

called upon to prove our worth. But how will the strings of control be attached so that the operation appears as if guided by some gigantic hand instead of developing into a series of inter-related flurries of confusion? And who will manipulate this control and with what resources?

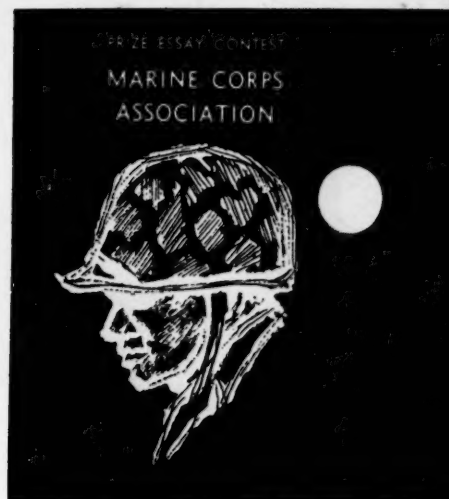
It is not important to consider all the meanings which can be applied to the seemingly innocuous word "control" such as: to restrain; to govern; to direct; to command; to influence; but it is extremely important to develop an appreciation of its pliability. Until now the business of controlling aircraft during operations by Marine forces

has been, basically, a concern of aviation, but with the introduction of the helicopter as a primary ship-to-shore vehicle the era of "air control by and for the aviator" has ended. Perhaps this is not a precise statement but it is true enough in respect to the employment of helicopters. The use of this vehicle adds considerably to the aviation interests of the troop commander which have tended to be circumscribed by: the delivery of ordnance on target, on time; aerial reconnaissance; and the occasional emergency resupply by air drop. Now, he is concerned with the delivery of his troops, supplies and himself—on target, on time.

The Marine Corps concept of

Our Friend the Helicopter

By LtCol James N. Cupp



HONORABLE MENTION GROUP I

What is the requirement for helicopter control during amphibious operations? Is it necessary to establish helicopter operations as a function of a separate and specialist group?

triphibious operations has long ceased to be novel. But the experience of being airborne in a leading helicopter during an actual ship-to-shore assault is still to be enjoyed by many of us.

In order for the ride to be enjoyable, the processes involved in executing the helicopter ship-to-shore movement and the method of employing these vehicles when they are established ashore, must be analyzed and clearly expressed.

The system for controlling strike aircraft grew with the amphibious assaults in the Pacific during WW II, where a test of each modification was readily available under actual conditions. The assault movement

by helicopter will be another matter entirely. Our concern will not be limited to the control and coordination of fire support for the Landing Force but will be manifested in the control of the Landing Force itself. Control (and even more important: a clear understanding of the control procedure by every member of the Landing Force) of the actual helicopter assault cannot, therefore, be dependent upon a period of trial and error. The first time has to be successful. If it fails, there may not be enough left for another attempt.

Perhaps, because the employment of tactical aviation in amphibious operations has developed to where it can almost be taken for granted,

it is not generally realized that we lack a clearly defined concept for the control of helicopters.

The excellence of the Navy /Marine Corps system of aircraft control for amphibious operations has been proven many times. Its flexibility and reliability was amply demonstrated, for example, during the assault on Inchon and Seoul, Korea, where close air support strikes were continuously available for the accurate delivery of ordnance within 5 minutes from the time of the initial request. Again, during the hectic days at the Chosin Reservoir, three or four hundred directed strikes in support of 1st MarDiv units were a daily occurrence. The system, and



the aviators that responded to it, can be given a large portion of the credit for the success of these operations.

It is only logical to initially append the function of helicopter control to proven resources readily available to perform the job. This has normally been done. The 12 to 16 helicopters of VMO-6 were on call through the TAR (Tactical Air Request) net in the early Korean war days and were handled by the FSCC (Fire Support Coordination Center) and the DASC (Direct Air Support Center)—Air Support Section of Marine Tactical Air Control Squadron Two—in the same manner as strike aircraft. There were deviations, of course. The supply of helicopters was extremely limited and the demand was great. Every person in the 1st MarDiv was acutely aware of this fact and every prospective user was satisfied that a sound justification to Division Headquarters was necessary. Therefore, the majority of flights were prearranged through normal communication channels. By SOP a request for a helicopter evacuation, over the TAR net by a FAC (Forward Air Controller), meant that the unit medical officer had verified the fact that aerial evacua-

tion meant life or death for a wounded Marine. More than once the Division Commander was unceremoniously dumped because the helicopter he was using was the only one available for such a mission. Helicopter request traffic over the TAR net was also limited because it often meant a choice between getting a helicopter and getting a division of Corsairs to take out an enemy position. The 2 requests could not be transmitted simultaneously and the net was usually fully employed with requests for strike aircraft.

It may be argued that the numbers of close support aircraft used in Korea will never again be available and the amount of traffic on the TAR net will not be so critical. Perhaps. But even at the Chosin Reservoir the 1st MarDiv did not have the unlimited support of the 1st MAW since it was supporting the entire Xth Army Corps.

Modern operations are conceived as a series of fluid, flexible engagements within an expanded area. The 120 odd miles of front covered by the 1st MarDiv in northern Korea, with several semi-isolated islands of resistance, appears to be as good an example as any available of this type of warfare in recent his-

tory, and it is known that the 12 air controllers working in the DASC near Division Headquarters were fully employed in the task of providing close air support. It was possible to process helicopter requests over the TAR net on an emergency basis only.

Consider for a moment that lifting the scheduled waves of a full blown helicopter assault will require an effort on the order of 2,000 daily sorties. Since the helicopters are organic to the Landing Force, this sortie rate is not a one shot affair. True, it will be reduced for continued operations ashore but to keep the air/ground team supplied and mobile, the helicopter force will be continuously employed.

It is not practical to superimpose an operation of this magnitude on a system developed for specific employment of tactical aviation. Handling the required number of helicopter sorties, using the equipment and procedures designed for close air support operations, will inevitably lead to the suffocation of the primary mission of the present control system. The integration of aircraft strikes with the organic fire and the tactical movements of ground forces is an exacting operation which requires the full concentration of all personnel concerned. For example, it is doctrine that silence on the TAR net means consent by all interested echelons for the conduct of an air support mission. But let's not kid ourselves. Silence may also mean that the regimental TACP (Tactical Air Control Party) with primary interest, may be located in such a position that the message was never heard. It also might mean that somewhere within the system a transmitter on the TAR net has failed. This is only one of many imponderables which must be considered within the DASC and the FSCC when coordinating and processing a request for aircraft. It does not mean that the system, designed for speed, is faulty. It does mean that the controller, director and coordinator must be so attuned to the pulse of the operation, that correct decisions can be made despite such possibilities. For instance, in the situation just cited, the operators within the DASC and FSCC must know the



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position of the TACPs and whether they are displacing or not; the condition of the equipment of each TACP and the skill of the men operating this equipment. They must know, personally, each FAC on the net; where they are and what their units are doing. By this knowledge, and by experience, a reliable determination can be made as to just what silence on the TAR net means.

This familiarity is the essence of our air support. It requires a very special talent to deliver our kind of air support for amphibious operations. The development and employment of this talent requires the full time concentration of the personnel allocated to run the system.

A solution that has been considered for incorporating helicopter operations with the air support system is the establishment of a radio net similar to the TAR; a Helicopter Request net (HR). The FAC has the men and equipment available to operate one radio set at a time on the TAR net and, as required, a Tactical Air Direction net (TAD). He must operate on the TAR net at all times in order to: keep abreast of the air support picture; request aircraft; and, in general, maintain his position within the system for the benefit of the whole. In addition to the problem of obtaining additional nets in the high frequency spectrum to be used as HR nets, the FAC would, of necessity be forced to leave the TAR net to handle helicopter traffic on such a secondary net. If the FAC handles helicopter traffic by this expediency, the air support system will deteriorate because an essential element cannot contribute his fair share.

What is the requirement for helicopter control during amphibious operations? The answer to this question, quite naturally, is dependent on the type of control that is desired—or how to define the word "control" as applied to helicopter movement. If the military meaning of "command" is always implied by the term "control" a different requirement is placed upon the control system than if the words "restrain" or "influence" are implied.

This, of course, is the crux of the problem. We are familiar with control as applied to the system for directing close air support aircraft.



We are not so sure what we mean when we speak of control for helicopters. Nor, for that matter, have we unmistakably defined an integrated air-ground team.

If the helicopter units alone are to be integrated with the ground forces, then another supporting element has been established and an independent system for command and control must be devised within the ground forces. However, if we are talking about a complete air-ground integration we are at least implying that all employment of forces are for the equal benefit of the aviation and of the ground units involved.

With this in mind and remembering the limitations of the air support system in respect to handling requests for helicopter support except on an emergency basis, a general analysis of helicopter operations during a triphibious assault may provide a clue as to how helicopters might be best employed without additional systems and accompanying personnel, equipment and installations for their control.

During the development of the present Naval/Marine Corps system of air control, the size of the area involved and the magnitude of air operations to be undertaken often dictated the establishment of air direction centers subordinate to a control center. As the magnitude of helicopter operations in amphibious exercises increases, it becomes apparent that several agencies for the control and coordination of helicopter operations will be necessary during the ship-to-shore phase.

For the control of strike air operations the terms TACC (Tactical Air

Control Center) and TADC (Tactical Air Direction Center) are standard. The status and functions of these centers are well established. The terms HCC (Helicopter Control Center) and HDC (Helicopter Director Center) are becoming standard descriptive terms for helicopter controlling agencies established by the Navy aboard amphibious shipping. In some respects, the selection of "HCC" and "HDC" is unfortunate. The similarity of terms connotes a parallelism of function which does not in fact, exist. An acquaintance with the TACC and TADC is apt to lead to erroneous assumptions concerning the functions and status of the HCC and HDC. One such assumption is derived from the capability of the Marine Aircraft Wing to establish a TACC or TADC ashore.

When control of air operations is passed ashore the Marine aviation counterpart of the ship based TACC assumes control in the objective area and performs the identical functions of the Naval agency. The Marine Aircraft Wing does not, however, have the facilities, manpower or function required to establish the counterpart of the ship based HCC or HDC. Another dissimilarity between the TACC and HCC which is often overlooked is that the HCC is a subordinate unit, operating under the general guidance of the TACC. However, in the parlance of amphibious operations a "CC" (Control Center) agency is presumed to be empowered to act with supreme authority in the name of the over-all commander.

There is no gainsaying the simil-

arity between these 2 centers; both control aircraft in the objective area; both must be prepared to protect assigned aircraft from friendly and enemy fire power, and must be able to concentrate aircraft for the most efficient execution of the job at hand. Over-simplification of these similarities, however, is a hazard which must be avoided. Their primary functions are completely dissimilar. The function of the helicopter controlling agency is to route helicopter traffic for the most expeditious movement of troops and supplies from ship to shore. The tactical air controlling agency provides, *inter alia*, air defense and tactical air supporting fires for the Amphibious Task Force.

In the TACC/TADC operations aboard amphibious shipping, constant liaison is maintained with SACC (Supporting Arms Coordination Center—which for all practical purposes is an appendage of the TACC itself) for the integration of Air, Naval Gunfire and Artillery with the fire and maneuver of the assault forces.

When the situation permits and facilities are established ashore, the same coordination is accomplished through the FSCC organic to the Landing Force. Fire support coordination, coupled with the precise control of supporting tactical aviation, is a recognized necessity and these functions are phased ashore in an unbreakable pattern of parallel activity between waterborne and shore established air control units.

In HCC/HDC operations during

the ship-to-shore phase, detailed integration with supporting fires does not constitute a major task. The effect of these fires must certainly be taken into consideration but the helicopter control agency aboard amphibious shipping is not normally concerned with these operations. The primary function of the HCC is to get troops and supplies ashore and in order to accomplish this mission effectively a task organization must be formed which will dissolve when the task at hand is accomplished. Not a new organization. One that has always been established for the control of waterborne landing ships and craft during the conventional ship-to-shore movement, so that the prescribed landing plan could be executed with the least confusion and delay.

The helicopter direction/control center then should be considered as an extension, albeit a very complex extension, of the control organization established for the conventional ship-to-shore movement. Helicopter directors within this organization will not make decisions as to allocation of available helicopters to troop units nor prescribe the manner in which shipping will be unloaded. The landing force unit, part of the HDC, provides in the name of the Amphibious Troops Commander, the guidance necessary in the readjustments to the helicopter ship-to-shore movement plan, the selective unloading or shipping and the resupply of helicopter-borne units who have landed in assault. Maintenance of the integrity of heli-

copter serials, planning refueling schedules, protection of helicopter lanes and traffic control, is the business of the helicopter directors. Events which could affect the operation as a whole are referred to higher authority by joint action of the Landing Force and Naval components of the center. Higher authority will be the TACC which retains *command* control of all air activities, in that it can speak for the Amphibious Task Force and the Amphibious Troops Commander whenever it is requested or required to do so.

While ship-borne, the physical location of the air control agencies contributes to an understanding of the role they play. The TACC is located on an AGC, the flagship of the Commander. Obviously it is the senior center. TADC's are located aboard APAs or possibly AKAs. Helicopter Control will be on board helicopter carriers which point up their importance and the specialized operations which they conduct.

As the operation progresses and the responsibility of the ship based units shifts to shore installations, the well defined picture becomes distorted and loses much of its identity.

The Landing Force TACC (initially a TADC) may be with the headquarters of a Marine Aircraft Wing or it might be with a combined air/ground headquarters. However, sizable portions of this organization will seem to have broken off to form separate and distinct agencies. CAOC's (Counter Air Operations Centers) will spring up near the periphery of the landing force objective area on high ground; ASRT's (Air Support Radar Teams) will begin operations just to the rear of the troops in contact, and something particularly unidentifiable with the ship-board TACC comes into being near a Division sized CP—a DASC.

The undulations of terrain force these various units to deploy wherever they may best perform their function. They are no longer in juxtaposition with the TACC although they are still as much a part of it as they were when these functions were carried out aboard amphibious shipping. Consider, for a moment the DASC—a unit designed



to provide close air support to the Landing Force. Aboard ship, close air support control operations are performed within the space assigned to the TACC. As the operation progresses the small, mobile radios employed by the FAC's cannot maintain contact with the distant TACC, so the close air support unit moves ashore. The only reason for the existence of the DASC as a separate control agency is to maintain contact with the front line FAC. At present, contact can usually be maintained as far back as a Division CP. If distances increase between battalions and division, it may have to locate farther forward. Conversely, if the radios operated by the FAC are improved sufficiently, the DASC can be eliminated and the function resumed at the TACC wherever it may be—on land or sea. Until such a development takes place, a DASC must exist and it must be able to move wherever it is needed by the TACPs of the battalions and regiments which must have efficient close air support communications/operations. Yet, in moving away from the TACC, the DASC does not lose its identity with it. It simply is the unit of the TACC which normally moves ashore first in order to ensure the continued conduct of air support operations and will probably land with the Headquarters of a division sized unit soon after the assault waves have landed. It is also at this time that ship-to-shore helicopter operations enter into the most complicated phase; landing "on call" serials, general unloading, and the resupply of units previously landed in dispersed areas. The DASC is primarily concerned with coordination strike aircraft operating in direct support of Landing Force units. There is within the DASC, an aviator qualified in helicopter operations whose function is to help helicopters, operating in the area of responsibility assigned to the DASC, to most efficiently accomplish their assigned mission. This he does by such activities as plotting safe lanes for helicopter flights, logging flights in and out as they perform their missions and passing last minute instructions. He does not compute helicopter loads, divert helicopter flights or receive requests for helicopter support. He is there to handle helicopter traffic in con-



sonance with the plans and schedules prepared and executed by the helicopter control agency. He cannot assume the complex functions of the HDC.

During the ship-to-shore phase, helicopter employment is preplanned in detail. The helicopter control agency can manipulate the serial landing table to a limited extent in conformity with operations ashore but in doing so, complete helicopterborne serials must be considered as opposed to helicopter loads. If an attempt were made to lift portions of serials, leaving the remainder to be picked up as opportunity permitted, the problem of maintaining reasonable records of the progress of scheduled unloading would soon become insurmountable. For this reason some spare helicopters must remain on call to fill in for helicopter losses which otherwise would prohibit a flight from lifting a complete serial. In any event, there will be few occasions when helicopters can be diverted from preplanned missions during the assault landing. During the general unloading phase, "on call" requests for helicopter support could be handled by the HDC by utilizing Force tactical or command nets or the established communication between landing zones and the Landing Force representatives in the HDC.

The movement of troop units, supplies and equipment by helicopter is a rapid process when compared to movement by foot, truck or landing craft. However, the requirement for detailed planning in all but the most routine administrative troop movements, has not diminished in the least. In the execution of current amphibious tactics, the necessity for coordination and advance information to all units prior to movement of forces is increased rather than decreased. It is not necessary nor desirable for helicopter movements to begin minutes after a request is initiated as is the case with close air support aircraft. Because of the essential aspects of detailed coordination and planning at all echelons, requests for unscheduled employment of helicopters must be routed through normal established channels to the command unit exercising jurisdiction over helicopter operations.

These procedures and the reasoning behind them remain constant throughout the operation.

It is not exactly true that the Landing Force control unit within the HDC dissolves. The functions performed by this agency must still be performed ashore. However, as in the case of other controlling agencies it is not apparent as to how this will be accomplished when the peo-



ple concerned close up shop and re-join their units ashore. There no longer appears to be unity in the helicopter control business.

There is the G-3 representative of Wing Headquarters who, together with the Wing 4 coordinated the helicopter movement of aviation units ashore and the initial build-up of supplies to enable these units to start operation, such as the CAOC, the DASC, the Marine Wing TACC, elements of the helicopter groups and other tactical air groups. In addition, the Wing 3 representative worked closely with the Naval Director in charge of the HDC and monitored the actual employment of the Wing's helicopters. Representatives of the helicopter groups were there to give technical advice and assistance. These people are now free to join their parent aviation units ashore.

There are the G-3 and G-4 representatives of the ground forces who coordinated: the tactical employment of troops landed in assault helicopters with the operation of other forces; the use of alternate landing zones and approach lanes; and worked closely with the landing ship and craft control organization to efficiently and expeditiously move

all equipment and supplies ashore. Representatives of the helicopter landed units were there to advise and assist in the movement, supply and resupply of other forces. These people too are free to join their organizations ashore.

These representatives of the Landing Force were together in the helicopter controlling agency (or agencies) to enable the Navy to expeditiously and efficiently "Land the Landing Force." The jobs they performed, pertaining to helicopter movements, were germane to Marine air/ground operations and training, before the movement to the objective area occurred, and remain so at the objective area.

In truly integrated operations there is no need to establish helicopter operations as a function of a separate and specialist group, since these versatile machines must be operated indiscriminately for the good of the force as a whole. *Movement* by helicopter accomplishes the desired rapidity of action. Planning for this movement involves the same methodical processes associated with military movement by any means.

Helicopter operations ashore, then, will be generated by the requirements of the situation, coordi-

nated at the operational and logistics levels of the forces employed and planned in detail by the tactical units involved. The actions often mistakenly associated with their control will have taken place before the helicopters leave the ground. What remains is to "govern" while airborne or "traffic control."

Many facilities will have been established to perform the functions of helicopter traffic control within the objective area: each airfield will have communications with the aircraft working in their vicinity; shore party units which were initially employed in assisting the landing of assault helicopters will still have this capability in landing zones or in supply areas; in the boundary areas CAOCs will be monitoring nets available to helicopters and the DASC will maintain contact with helicopters working with tactical units. Except for missions conducted in conjunction with units in contact which will require coordination with supporting fires, the main objective in maintaining continuous communications with helicopters will be for warning of anticipated enemy action and for rapid concentration of forces in an emergency.

The problems confronting the Marine Corps relative to the employment and control of helicopters are not organizational in nature. Nor does their solution require the establishment of an elaborate specialized system. They can be resolved through an appreciation of the requirements of all elements of the Landing Force who will, in some measure, be dependent for normal operations upon these aircraft and the development of efficient, cooperative and realistic operating procedures.

USMC



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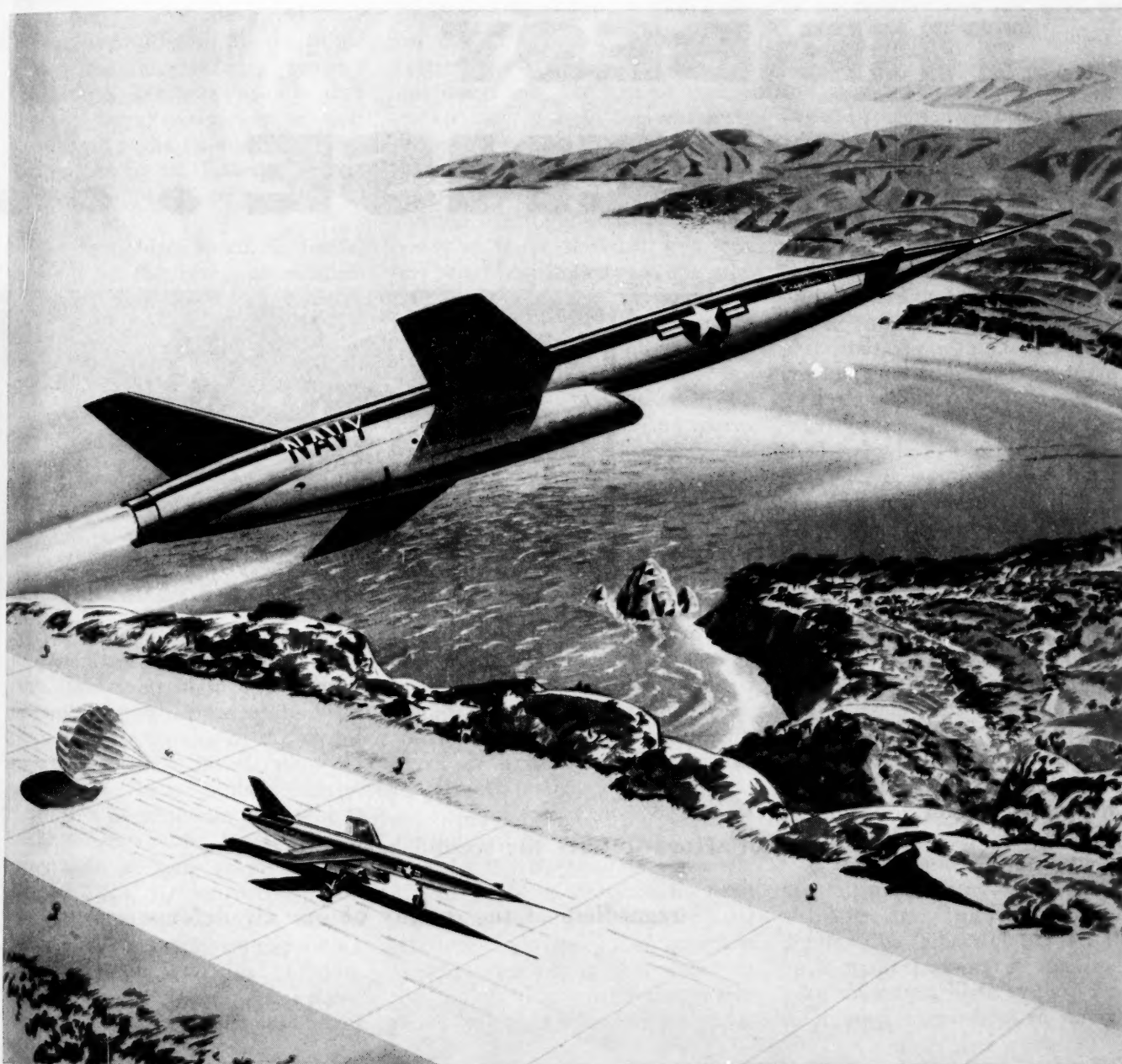
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THE BEST DEFENSE . . .

By Capt James G. Martz, III



We cannot afford to have the second best air offense,
regardless of the quality of our air defense



✦ The impenetrable air defense system is a myth. There are 3 tactics which may be employed for air attack which are invulnerable to any air defense system yet devised. They are to proceed to and attack the target at 1) a speed beyond the air defense system's capability, 2) an altitude above the air defense system's capability, or 3) an altitude below the air defense system's capability. We may assume that these 3 basic tactics are as well known and understood by the enemy as they are by us. Either side may choose to employ them singly or in combination.

The first, high speed, is fundamentally in the realm of pilotless aircraft or missiles, since accuracy considerations dictate computation of the flight path or trajectory before take off. The speed involved is too great for a human or mechanical computer to adjust the flight path or trajectory on the basis of target information acquired enroute. The inherent weakness in this tactic is inaccuracy. It is, however, an important tactic because it is difficult for the defender to detect the approach of a high speed weapon and even more difficult for the defender to intercept and destroy it. The inherent weakness of inaccuracy may be overcome by increasing the yield of such a weapon to the point where its military effects radius exceeds its circular probable error. Since this puts the effective yield of such a weapon in the order of magnitude of tens of millions of tons of TNT, its destructive power is highly unselective. Such a weapon is most logically designed to produce a large amount of residual radiation and radio-active fallout and is therefore not suitable for the support of

troops. While this high speed tactic is excellently suited to win a war at long range, it is doubtful that our Western ethics would allow us to employ it under any but the most dire circumstances. The enemy, however, may not be so reluctant.

The second, high altitude, is applicable to both piloted and pilotless aircraft as well as missiles. The inherent weakness in this tactic is also inaccuracy, but not to such a marked degree as in the extremely high speed tactic. Smaller yield weapons may be employed by a high altitude bomber or guided missile and the selectivity of its destructive power in terms of target area may be better controlled. While the problem of detecting the approach of a lower speed attack is somewhat simplified for the defender and in terms of a single attack, interception is possible, a multiple strike soon saturates the air defense system and the likelihood of such an attack being unsuccessful is remote.

The third, low altitude, entirely belongs to the piloted aircraft and this is its inherent weakness. While all 3 tactics discussed here are subject to human frailty, the extremely low altitude tactic is the most demanding of human skills in its execution. A low altitude attack is largely undetectable by the defender and while the concentrated capability of an air defense system might conceivably destroy a single attacking airplane at low altitude, against multiple attacks at low altitude the defender is faced with an extremely difficult problem. However, the most important factor in this tactic is its relatively high degree of accuracy. Weapon yields may be reduced to the point that their destructive power is highly selective; yet yields

of large magnitude may still be employed when the occasion demands without a significant decrease in accuracy.

Of these highly effective tactics discussed, the extremely low altitude attack has by far the greatest application to the offensive capability of Marine Corps aviation. This tactic is the most readily adaptable for use with the current weapons and it is the only tactic which may be used consistently in proximity to friendly troops without first establishing air superiority. Its inherent weakness, the pilot, may well prove to be its greatest attribute, for no mechanical computer envisioned has such reliable and compact sensor units or is as versatile as the human brain. The human being, when properly trained and motivated, can be the most valuable component of a weapons system.

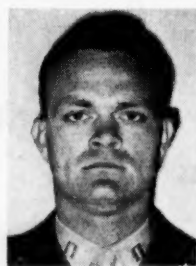
In the good old days, a flight of airplanes would proceed from base to the target area in some semblance of a formation, depending upon the flight leader to take them to the target and identify it. The airplanes would flock together after the attack and the flight leader would lead them back to base. The only pilot in the flight who had to know anything more about tactics than how to drop bombs and keep the rest of the formation in sight was the flight leader. The pilot training program was predicated, in large, upon the accumulation of experience gained as a follower.

In the execution of the extremely low altitude tactic, the attacking airplanes must proceed independently. The impact of this requirement upon training is that every pilot must be a flight leader. Every pilot must know how to navigate

at low altitude without radio aids. He must be able to identify the target and deliver the ordnance accurately. He must know how to return to base without divulging the location of the base to the enemy. He must be mentally and physically prepared, in some cases, deliberately to abandon his airplane and return on foot. In short, to successfully employ the low altitude tactic, every pilot must be thoroughly trained and highly motivated. No amount of experience as a follower will qualify a pilot for extremely low altitude attack.

The implication is clear. The ability to obtain a good score on the bombing range is no longer the criterion for an attack pilot. The ability to fly close to the ground over long distances without becoming lost, to analyze enemy defenses, and to avoid detection, plus the ability to hit the target, have become the criteria to which we must aspire. When a sufficient number of aviators are skilled in execution of the low altitude tactic, an attacking force may strike at will anywhere within the range of their airplanes.

Because of the difficulty in defending against such an attack, it is imperative that our offensive capability be superior to that of the enemy. This is the real key to air supremacy. Without superior offensive capability, air supremacy becomes a meaningless phrase. Fighter airplanes may establish limited control of an air space, but since the attacking force may concentrate or disperse, as appropriate, and invade



Capt Martz entered the Marine Corps in 1950 after graduating from the University of Washington. He has served, as a pilot, with: MAG 11, MAG 32, MAG 33 and VX 5. For service in Korea, he was awarded the DFC and 4 Air Medals. His motivation for writing this article was the desire "to make the GAZETTE more interesting to aviators."

this air space at a time of their own choosing, it is possible to transverse or attack a target within an area in which fighter airplanes have established air superiority. When all is said and done, the battle of Midway which involved thousands of men and hundreds of airplanes was won with 9 well placed bombs.

Granted that passive ground defense measures such as dispersion will reduce the number of casualties suffered and force the attacker to expend more ordnance on less lucrative targets, victory will still go to the side with the most effective striking power. We can not afford to have the second best air offensive capability in any engagement, regardless of the quality of our air defense, because no air defense system will ever be capable of stopping a determined air attack. Air defense fighters require control; control requires radar; radar requires electronic emissions; electronic emissions provide homing signals for attack airplanes. The attacking airplane can detect such an emission twice as far away as the radar can see a blip. Air defense radars may well prove to be more of an aid to the attacker than to the defender.

According to the FMF Organization and Composition Board Report in the May 1957 issue of the GAZETTE, the ratio of fighter airplanes and pilots to attack airplanes and pilots in the Marine Corps is 5 to 4. In addition, each Wing includes 3 Air Control Squadrons (MACS) for air defense and only one Air Support Squadron (MASS). This preponderance of money, manpower and time in the pursuit of a mythical impenetrable air defense is inconsistent with the expected combat effectiveness of any air defense system. Since the size, and hence the military effectiveness of the Marine Corps is legislated, it appears that our private air defense capability is gained at the expense of our offensive capability. An air defense system may well be a luxury which we can not afford. According to the Board's report there is a requirement for a capability in the FMF to repel enemy air attack. This is not a valid requirement until some one invents a machine which generates a force field around the landing party through which an attacking airplane may not penetrate. One does not repel air attack in this day and age any more than one repels an artillery round. The only sound basis upon which an effective air defense system may be based is to assume that an air attacking force must be annihilated to prevent it from striking effectively.

The concept held by some that we may have both an excellent offensive capability and an air defense system by assigning fighter squadrons a secondary mission of attack is based on wishful thinking. The 2 missions are mutually exclusive. The vehicles required to perform either mission satisfactorily are incompatible with the other mission. While it may be argued that the aeronautical specifications for the perfect fighter airplane and for the perfect attack airplane are nearly identical, we don't



have perfect fighter airplanes nor do we have perfect attack airplanes. The fire control equipment will not function for both missions and, what is more important, the pilots will not function for both missions. The motivation of an aggressive attack pilot is alien to the motivation of an aggressive fighter pilot. The fact that in a piloted airplane the pilot is an integral part of the weapon system and success or failure of the mission is as much dependent upon him as any other component may not be ignored. The man who insists that an aviator, if trained properly, may be a fighter pilot one day and an attack pilot the next is not sufficiently educated in the conduct of either or both of the 2 missions. Assigning fighters a secondary mission of attack or vice versa is attempting to get something for nothing.

Since it is a principle that "only offensive action achieves decisive results" and we know that "the best defense is a good offense" and since the present economy and military posture of our country are based upon the hypothesis that "a strong offensive capability is the major deterrent to war," it seems incongruous that the Marine Corps, which prides itself on its fighting capability, should employ the major portion of its operational air strength in research and development of an air defense system at the expense of its ability to conduct offensive action. It would be wonderful for the Marines to have an ef-



fective air defense system. This is not possible under the present circumstances. A great deal of research effort should no doubt be expended to this end, but let us keep research and development items out of the FMF and concentrate on becoming proficient with proven weapons to produce an operational air attack capability second to none. It is not suggested that fighter airplanes be deleted from the Marine Corps' arsenal. Fighter airplanes have a most valid mission in direct support of our combined air-ground offensive capability. When transport aircraft for paratroop, helicopters for assault troop transport, or reconnaissance aircraft, intend to enter a zone of expected enemy fighter activity, a fighter escort is most appropriate.

It is suggested, however, that an air attack capability sufficient to neutralize enemy fighter bases would effectively reduce the number of occasions when enemy fighter activity was expected and thereby reduce the number of fighters necessary to perform escort duties.

The extremely low altitude tactic gives us the opportunity to proceed now with the equipment and manpower at hand. We must not be trapped into waiting until too late to discover that our attack capability is less than the best. Now is the time to commence training with proven equipment and tactics to enable Marine Corps aviation to perform better than anyone else that function which is essential in war —OFFENSE!
US MC



Pepper Pot

☛ TWO GENERALS — the commander of the Division and the commander of the Brigade — were coming for inspection together. I was worried as the first general liked the soup very peppery and the second wanted it without pepper at all. I consulted with my top sergeant and he said, "Don't worry, I will fix it fine." On inspection day the soup came in a silver dish with two wooden spoons for the generals. Each tasted it and said, "Perfect." The top sergeant explained to me later: "The soup was without any pepper, but the spoon for the first general was cooked in pepper for two days."

Col Boris d'Adamovitch Leliwa

Never a Doubt

☛ FOR OUR FOURTH TRAINING DAY inspection in Boot Camp, we were expected to know all rank insignias and our DI pounded it into our heads that a Marine Gunner would inspect us. He further emphasized that Marine Gunners wear bursting bombs.

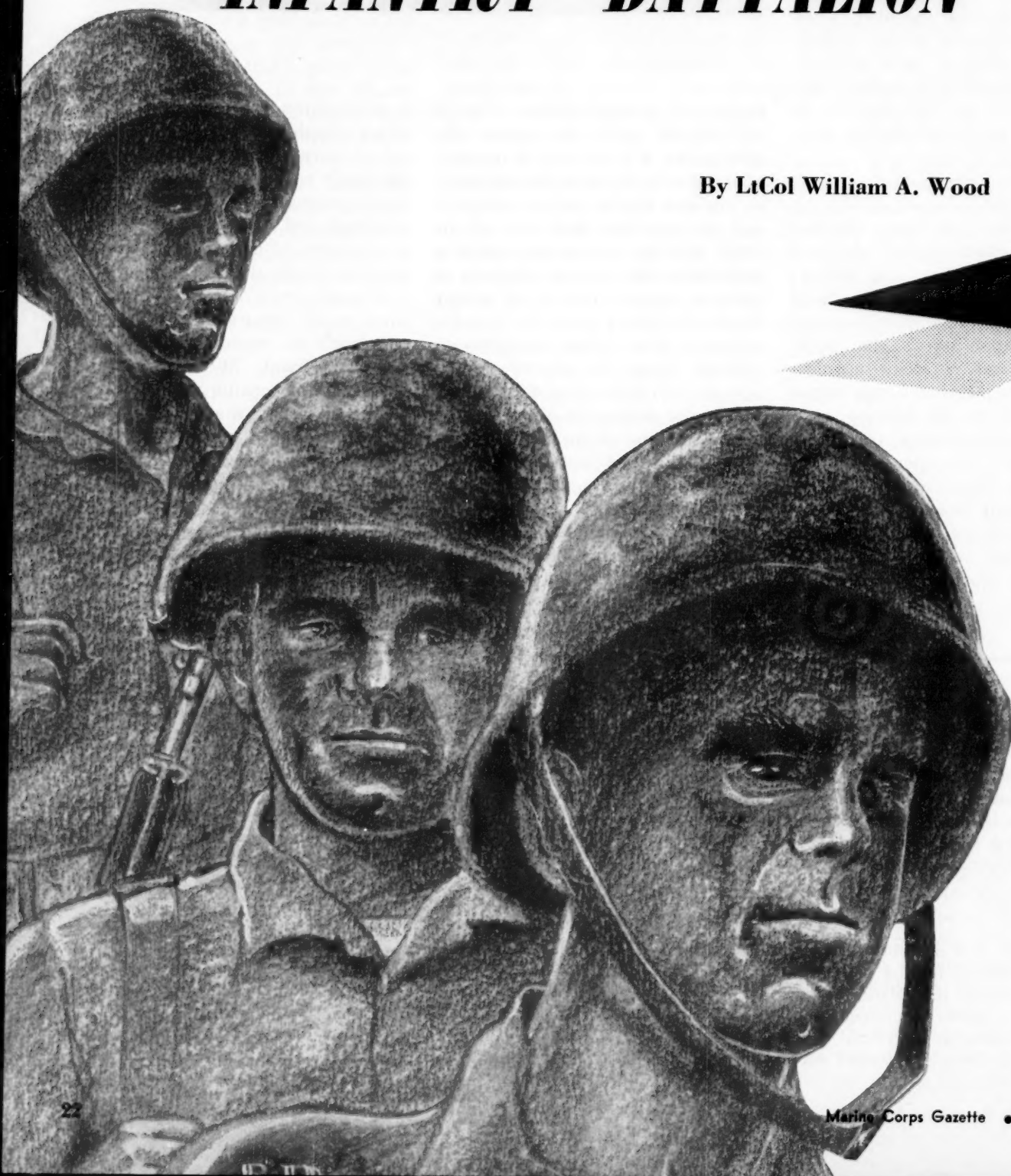
When the inspecting officer paused in front of me he asked, "What's my rank, lad?" To which I confidently answered, "Sir, you are a Marine Gunner." Turning as if to go on, he snapped, "How do you know?" My mind went blank until I came up with, "The DI told us, sir!"

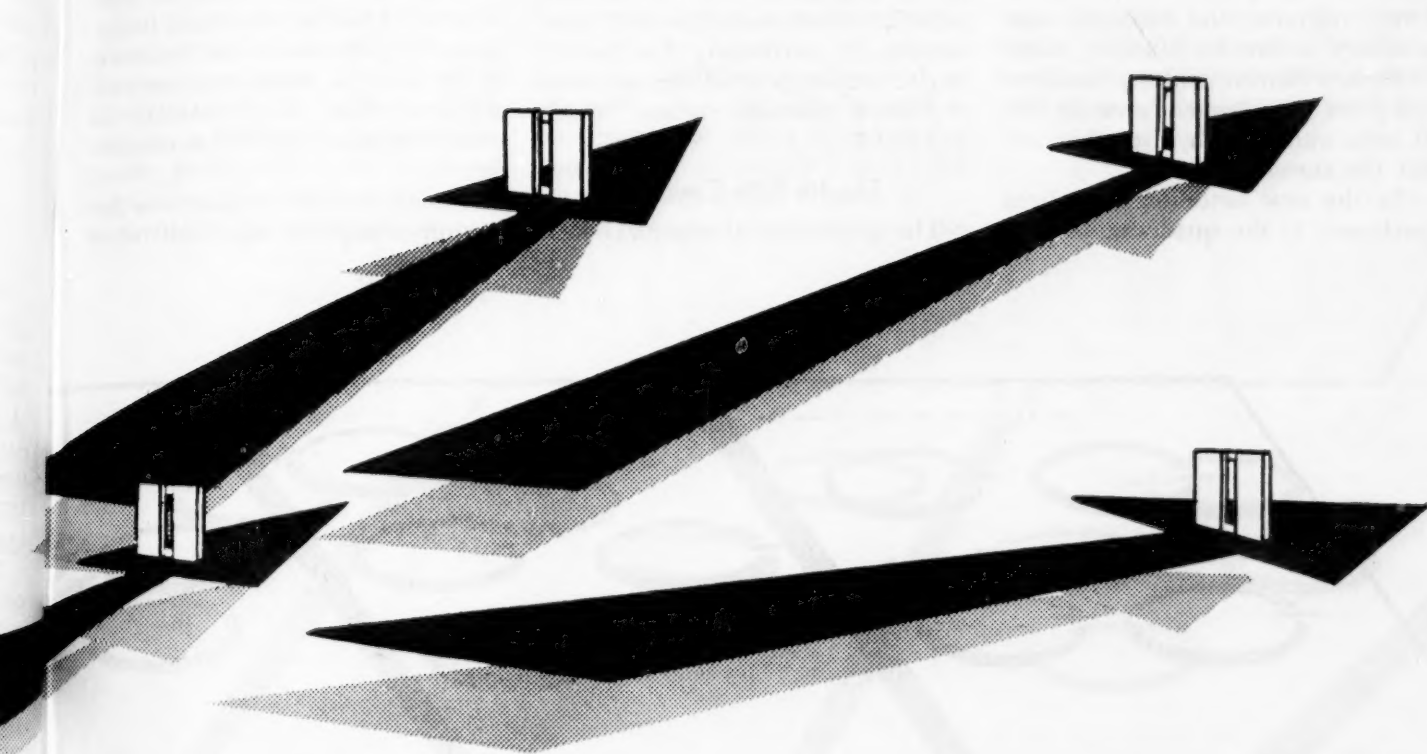
TSgt George LeHoullier

Capabilities of the . . .

NEW MARINE INFANTRY BATTALION

By LtCol William A. Wood





✿ FOR A GOOD MANY YEARS THERE have been strong adherents in the Marine Corps of an infantry organization that contains 4 rather than 3 equally capable maneuver-elements: a quadrangular or "square" rather than a triangular formation. Similarly there has been a periodic hue and cry for a weapon organic to the infantry which will destroy or stop enemy armor with a great degree of reliability. Likewise we have hunted, constantly, for some method of mov-

ing supplies to and with our rifle companies without depending on the Korean A-frame bearer, the Army's mule, or the overloaded individual Marine. The best answer, yet, to these problems — and others as well — can be found in the new Marine infantry battalion.

Since the Spring of 1957, the reorganized 1st MarDiv has been testing the new infantry battalion—in company, battalion, regimental and division size exercises. These exer-

cises were conducted using a great variety of different tactical situations, in different types of terrain, and in varying climatic and weather conditions. As a result of the exercises, there is one opinion which all infantry regiment and battalion commanders in the 1st MarDiv share: "The new Marine infantry battalion is a great improvement over the old. It is an outfit which in combat will cut the mustard."

In the new battalion have been packaged: 1) the quadrangular con-

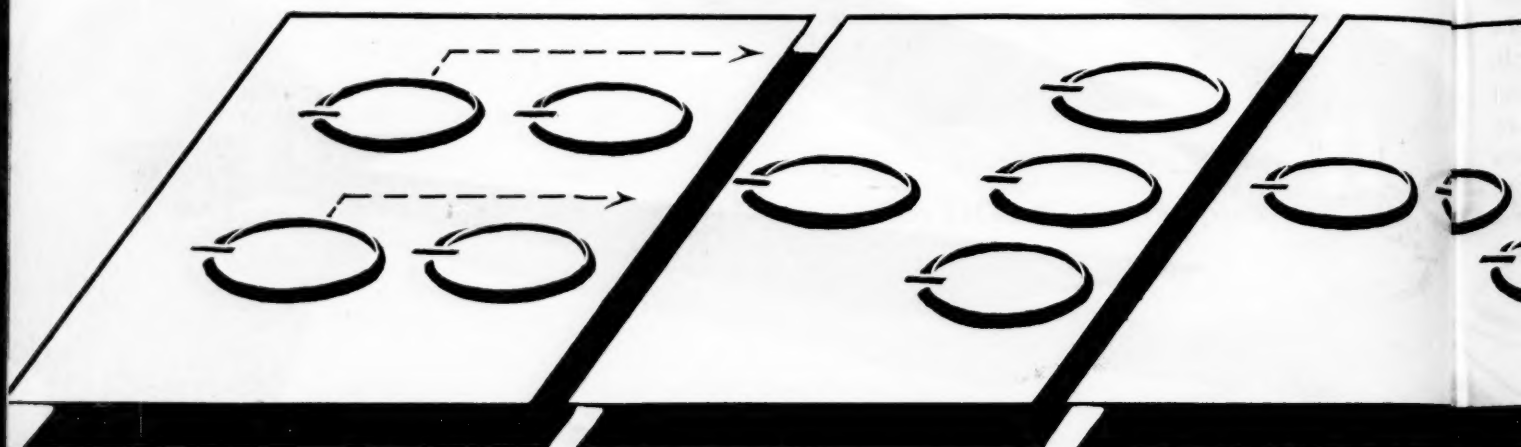
unit. Further, the battalion is possessed of a new set of tactical capabilities which distinguish it from the Korea and WW II type triangular battalions. An appreciation of these tactical capabilities is of importance to the battalion and regimental commander, in particular. For the effective employment of the battalion requires a different tactical "touch and feel."

The 4th Rifle Company

The quadrangular organization is

Essentially, there are 5 battalion formations which have been used repeatedly in 1st MarDiv tests. These are the Square; Diamond; "3 up, 1 back;" Echelonment, to the right or left; and the "Y" formation (see illustration). These are the basic formations, both offensively and defensively. In the field, there are many variations of these formations, as the enemy situation and terrain may dictate.

An appreciation of these new formations is acquired most easily when



cept — by the addition of a 4th rifle company; 2) an effective organic anti-tank means—the jeep-mounted 106mm recoilless rifle platoon; and 3) a much more satisfactory cargo hauling capability—a combination of Light Infantry Weapons Carriers (Mechanical Mules) and $\frac{1}{4}$ -ton trucks. Although there have been other significant changes in strength, organization and equipment which are both important and beneficial, it is these 3 characteristics that make the infantry battalion a more potent

not a new idea. Indeed, it is a very old one. It has been used by many military organizations since the Romans, including our own Indian fighters. It was used, in particular, when a formation which provided all-around security was required. The new 4-company infantry battalion is, therefore, an old idea in new garb. It is an idea which has significant application under conditions of atomic warfare, where the requirements for dispersion increase vulnerability to the flanks and rear.

they are made to contrast with those of the old triangular battalion. Whether it was squad, platoon or company, the formation most used in the triangular battalion was "2 up, 1 back."

For purposes of comparison, note that the "2 up, 1 back" formation "commits" $\frac{2}{3}$ of the battalion strength. Note also that if companies are rotated, at intervals and equally in this formation, each company is in the lead or attack $\frac{2}{3}$ of the time.

In contrast, examine the square formation. The square formation commits only $\frac{1}{2}$ the battalion strength. Further, if companies are rotated equally in this formation, each is in a reserve or support status $\frac{1}{2}$ the time. During sustained operations this can be an advantage: the formation permits the simultaneous resupply and reorganization, if required, of $\frac{1}{2}$ the battalion (2 companies) while the other half is committed. Likewise, in a continuing attack, the 4-company battalion



LtCol Wood was commissioned in the Marine Corps in 1941. During WWII he commanded: Recon Co, 5th MarDiv; Weapons Co, 28th Marines. From 1947 to 1957 he served as: ExO, G-2 Sect, HQMC; Operational Intelligence Officer, Naval Forces, Far East; Instructor, Armed Forces Staff College; ExO, 1st Service Regt; CO, 3rd Bn, 7th Marines. He was awarded the Silver Star for action on Iwo Jima, and is presently serving as CO, Hq Bn, 1st MarDiv.

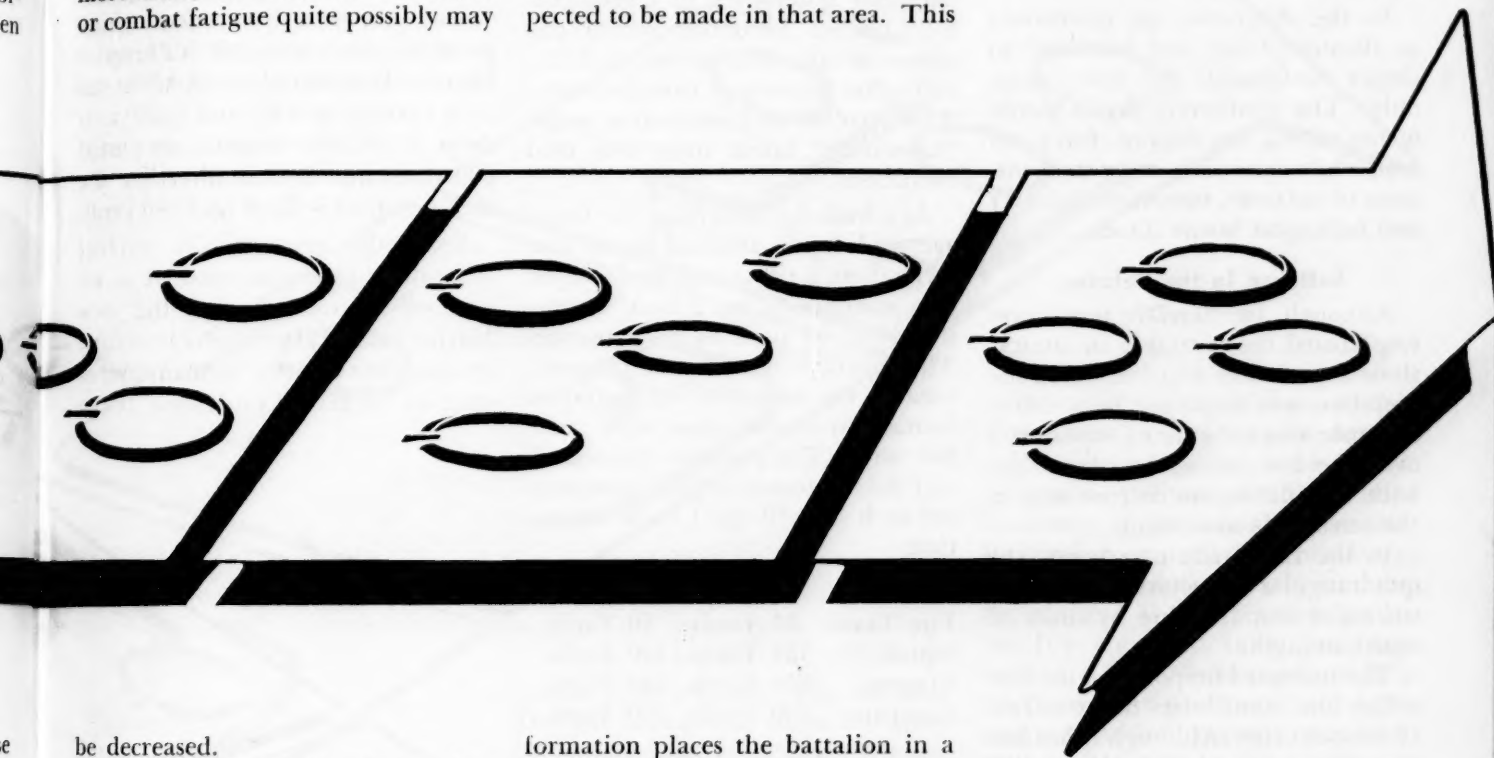
using the square formation, through execution of a "passage of lines" by the 2 reserve companies, can maintain a more equal momentum and weight of attack than could the triangular battalion.

The square formation not only can be of tactical advantage during sustained operations, it also may be of advantage to the individual Marine. Since, through rotation of companies, individuals can be rested more often, the incidence of chronic or combat fatigue quite possibly may

pany." The "Y" formation provides great depth to the battalion and is of advantage when the battalion is in a deployed advance and the enemy situation is not fully known or developed.

Another formation is the echelonment of the battalion. As shown here, the battalion is echeloned to the right. The right echelonment is used when the enemy threat is preponderantly to the right front of the battalion and initial contact is expected to be made in that area. This

ration of a rifle company from its parent battalion. Requirements for detachment or separation include: independent helicopter operations, rear area or beach defense, special reconnaissance missions, and screening. However, despite the capability of the 4-company battalion to retain a tactically sound organization when a rifle company has been



be decreased.

The second battalion formation which has been used extensively in the 1st MarDiv is "3 up, 1 back." This formation, adaptable in particular when the battalion is in a screening role, permits observation and physical coverage of a front at least $\frac{1}{3}$ again larger than that of the old triangular battalion, while still maintaining a company in reserve. When employed as an attack formation, "3 up, 1 back" permits the immediate commitment and concentration in the assault of $\frac{3}{4}$ rather than only $\frac{2}{3}$ of the total force.

The 4-company battalion in a "Y" formation, used on occasions but not extensively in the 1st MarDiv, also is of interest. Basically, the "Y" is the old "2 up, 1 back" formation with a tail on it. In this formation, the battalion has 2 assault companies, a "support company" following their advance at a comparatively close interval and prepared for immediate commitment, and a "reserve com-

formation places the battalion in a position to most quickly execute a single envelopment. The echelonment also is used to advantage as a screening formation.

The fifth battalion formation is the Diamond. The Diamond most often is used as a defensive formation which provides maximum all-around peripheral security. In the offense, it is a formation that is difficult to maintain.

Battalion In the Attack

1st MarDiv experiences have revealed the superiority of the 4-company battalion in the attack. The new battalion can employ a single rifle company on a separate or detached mission, away from the battalion, and still maintain a tactically sound triangular structure.

This is of particular importance in the vertical envelopment. The dispersed situations in which we fight today pose an increase in requirements for detachment or sepa-

detached, the unit separation concept requires that the battalion be left intact whenever possible. As currently employed, the infantry battalion is more vulnerable to enemy infiltration and attack of its flanks and rear than were the WWII and Korean triangular battalions in their less dispersed situations. In light of this consideration, the 4th company has added importance. It provides the battalion with a greatly increased security and reconnaissance capability. This increase, measured in terms of manpower, means the new battalion can employ 9 more reinforced rifle squads, or 27 more fire teams, or 108 more scouts on security and reconnaissance tasks, than could the old triangular battalion.

Left intact and permitted to employ all 4 companies, the new battalion has greater tactical flexibility

in conduct of the envelopment. In the single envelopment, one company may be employed as the enveloping force while the remainder of the battalion retains a triangular formation with a strong reserve; or, 2 companies may be employed to envelop while strong frontal pressure is maintained.

In the double envelopment, 2 or even 3 companies may be used as the enveloping force, while frontal pressure still is maintained.

In the diagrams, the maneuvers as illustrated are *not* intended to depict movements by foot troops only. The maneuvers depict movements of the enveloping force on foot, while motorized, or by combinations of infantry, motorized infantry and helicopter borne forces.

Battalion In the Defense

Although 1st MarDiv tests have emphasized the battalion in attack, those experiences acquired when the battalion was employed in a defensive role also indicate its superiority over the old triangular battalion, both in a deliberate defense and in the retrograde movement.

In the retrograde movement, the quadrangular structure permits a successive leap-frogging by units of equal strength.

The increased firepower of the battalion also contributes to its defensive superiority. Although it has lost nine 60mm mortars, it has gained 27 more automatic rifles, 11 more machine guns, 14 more rocket launchers, and eight 106mm recoilless rifles. And, finally from the standpoint of defensive capabilities, the increased number of small vehicles, including the "mechanical mule," provide the battalion with an organic means for the simultaneous move-

Frontages and Depths

With respect to the size of an area which the new battalion can occupy, or dominate, the addition of the 4th rifle company is a factor which in itself, provides an increased capacity. Coupled with this consideration, is that of the new formations described in the preceding paragraphs. A "paper analysis" of the new battalion's capacity for domination or coverage of an area can be made if the battalion is deployed in a geometrically perfect formation which discounts terrain, fields of fire, visibility and other important considerations. This involves an examination under "laboratory" rather than true field conditions.

As a basis for describing the frontages and depths attained by the new formations, a rifle company deployed in a standard "2 up, 1 back" formation may be used as the measure. The frontage of each rifle company used in the examples of battalion formations which follow is the same, 800 yards. The platoons, the squads and the fire teams, as is the company, are each in a "2 up, 1 back" formation:

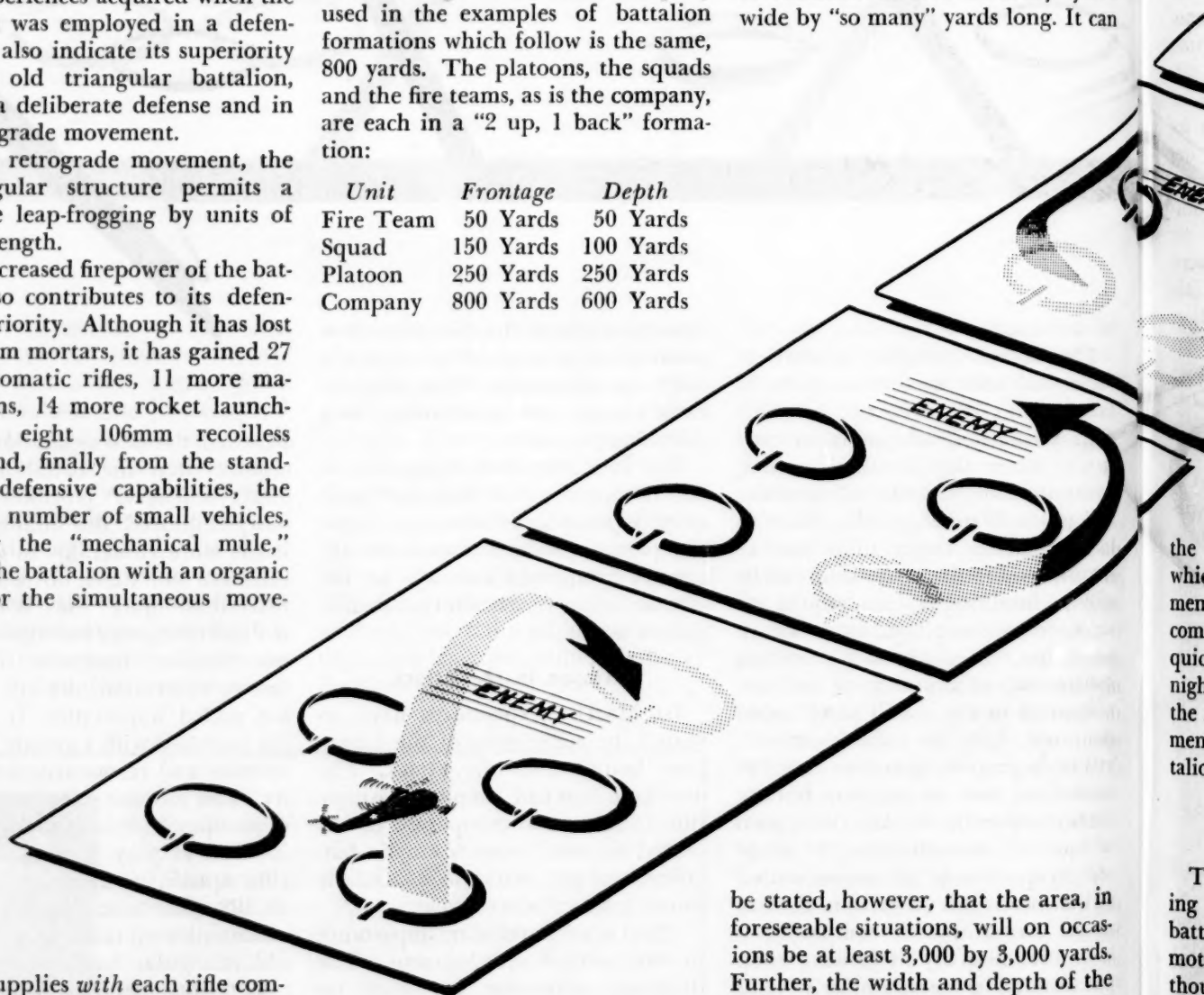
Unit	Frontage	Depth
Fire Team	50 Yards	50 Yards
Squad	150 Yards	100 Yards
Platoon	250 Yards	250 Yards
Company	800 Yards	600 Yards

The lateral distance between platoons is 100 yards. The front of the support platoon is 100 yards from the rear of the assault platoon.

The battalion formation which provides greater depth is the "Y." This battalion occupies an area 2,400 yards wide and 3,300 yards deep. If security elements are posted 500 yards to the front, flanks and rear, the size of the area occupied is increased to 3,400 by 4,300 yards.

The battalion formation which provides greatest width is "3 up, 1 back." This battalion occupies an area 4,000 yards wide and 2,150 yards deep. If security elements are posted 500 yards out in each direction, the area occupied is 5,000 by 3,150 yards.

From the geometrically perfect laboratory examples used, it is erroneous to conclude that the new Marine infantry battalion can occupy or dominate an area "so many" yards wide by "so many" yards long. It can



ment of supplies with each rifle company, and over routes not ordinarily feasible for other type vehicles.

be stated, however, that the area, in foreseeable situations, will on occasions be at least 3,000 by 3,000 yards. Further, the width and depth of the area often can be extended well beyond those distances, as the range

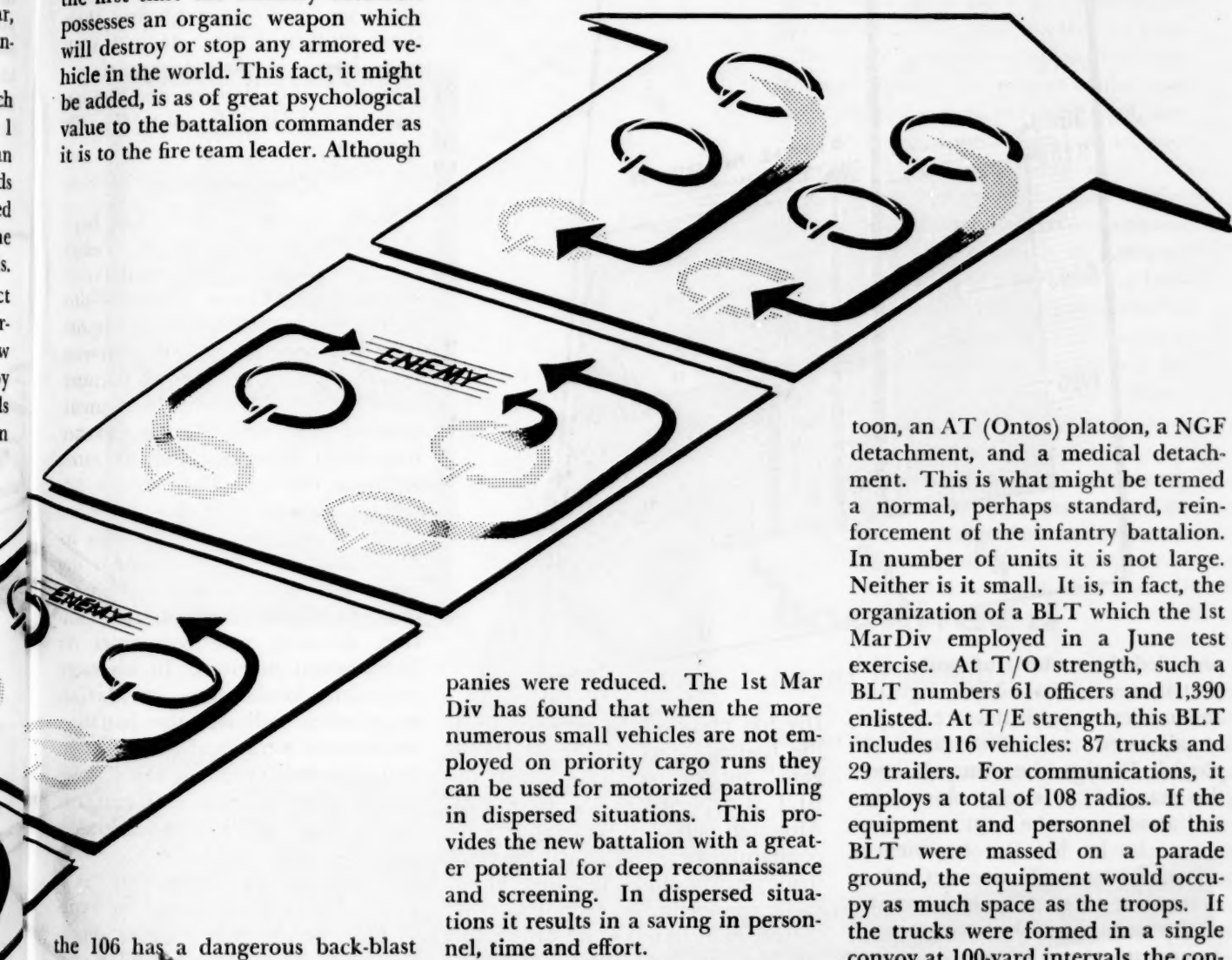
of supporting arms and radio communications permit.

An Effective Organic AT Means

The second characteristic which contributes to the battalion's new set of tactical capabilities is the addition of the 8 jeep-mounted recoilless rifles, in the 106 RR platoon. For the first time the infantry battalion possesses an organic weapon which will destroy or stop any armored vehicle in the world. This fact, it might be added, is as of great psychological value to the battalion commander as it is to the fire team leader. Although

The availability of more vehicles permits simultaneous distribution of supplies to rifle companies, which was difficult to achieve in the "old" battalion. In eliminating the vulnerable, high silhouette 2½-ton and ¾-ton trucks from the battalion, the hazards of supplying frontline com-

battalions — Battalion Landing Teams — constitute the basic ground combat unit of the Marine Corps, certain considerations regarding the BLT are worthy of mention. The first is its size. A typical BLT might consist of an infantry battalion, a 4.2" mortar battery, a pioneer pla-



the 106 has a dangerous back-blast which often necessitates its employment only on the flanks of the rifle company, and an annoying trait of quickly revealing its position during night firing, we have yet to hear of the infantry commander who recommends its elimination from the battalion!

Changes In Motor Transport Structure

The third characteristic contributing to the new capabilities of the battalion is the type and number of motor vehicles now assigned. Although the capability to haul cargo has not been increased, there is a greater number of small vehicles.

panies were reduced. The 1st Mar Div has found that when the more numerous small vehicles are not employed on priority cargo runs they can be used for motorized patrolling in dispersed situations. This provides the new battalion with a greater potential for deep reconnaissance and screening. In dispersed situations it results in a saving in personnel, time and effort.

The Light Infantry Weapons Carrier (mechanical mule) has recently been added to the 1st MarDiv. Although the "mule" cannot be waterproofed adequately for "wet foot" landings, it is a most useful addition. This low silhouette cargo carrier, moving cross-country with the rifle company over terrain other vehicles can not traverse, will move supplies farther and faster than any other current means.

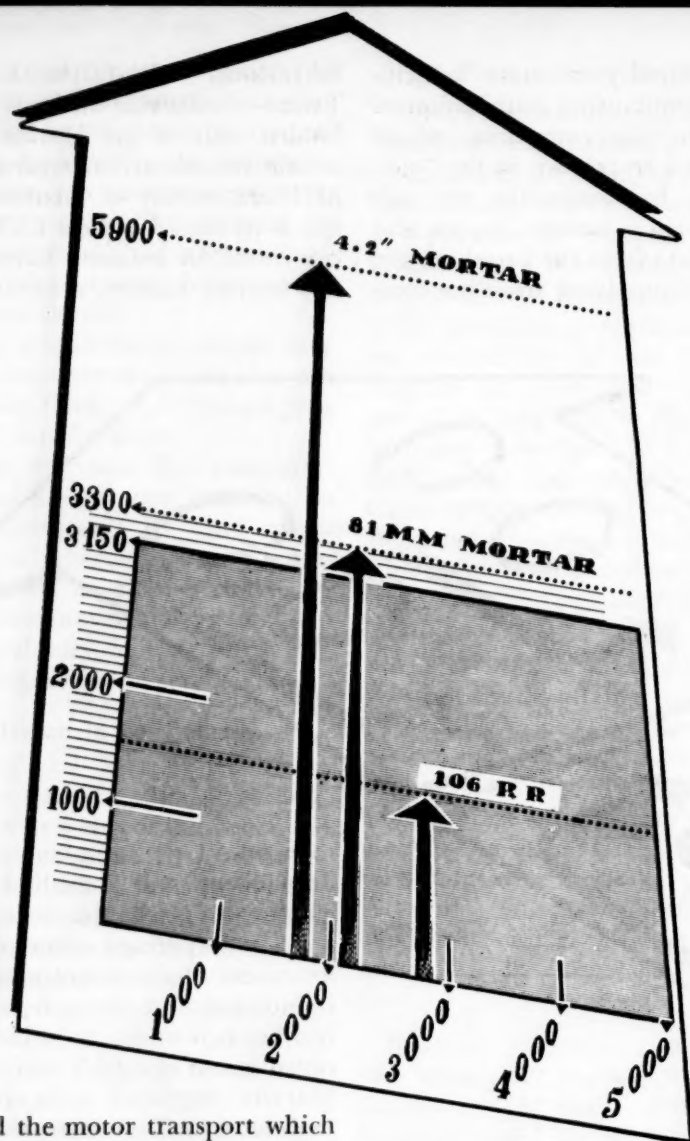
The Battalion Landing Team

To this point, the new Marine infantry battalion has been considered solely on the basis of its inherent organic capabilities. Since reinforced

toon, an AT (Ontos) platoon, a NGF detachment, and a medical detachment. This is what might be termed a normal, perhaps standard, reinforcement of the infantry battalion. In number of units it is not large. Neither is it small. It is, in fact, the organization of a BLT which the 1st MarDiv employed in a June test exercise. At T/O strength, such a BLT numbers 61 officers and 1,390 enlisted. At T/E strength, this BLT includes 116 vehicles: 87 trucks and 29 trailers. For communications, it employs a total of 108 radios. If the equipment and personnel of this BLT were massed on a parade ground, the equipment would occupy as much space as the troops. If the trucks were formed in a single convoy at 100-yard intervals, the convoy would be about 5 miles long. The point to be made here is that the new BLT is a very large and complex organization. 1st MarDiv exercises have revealed 3 problems which are encountered periodically in the employment of this organization.

Motor Transport

The first of these problems is the control and concealment of motor transport. A BLT of the size and composition described above is not always what many of us like to picture it as: a "light, hard-charging, fast-moving infantry outfit." It can be hard-charging and fast-moving,



provided the motor transport which contributes to its added logistical and tactical capabilities are properly allocated, controlled and employed. Further, the vulnerability of this transport to enemy observation and attack must be kept at a minimum. In 1st MarDiv experiences, one of the most effective methods of controlling and dispersing motor transport has been the attachment of 4 mechanical mules and a jeep to each rifle company. Although there are limitations to this method, it most often has proven satisfactory in the greatly dispersed situations in which many tests of the new organization were conducted. It should be mentioned, also, that when the BLT is isolated from other friendly forces and all vehicles are based in a central motor pool, the requirements for adequate security of such a pool may demand a force on the order of size of a rifle company. In most situations this is unacceptable.

Supporting Arms

The second problem the 1st Mar

Div has encountered periodically is the limited range of the BLT's organic supporting arms when the BLT is deployed over a large area. Although battalion commanders are constantly aware of the dangers of deploying beyond the range of organic supporting arms and internal communications, the size of the new BLT and its formations complicates the problem further. Previously, it was stated that in a "3 up, 1 back" formation the new battalion can occupy an area 5,000 yards wide by 3,150 yards deep. In this area, the BLT commander has the organic support of the 4.2" mortar (maximum effective range, 5,900 yards); the 81mm mortar (3,300 yards); and the 106 RR (1,300 yards for effective anti-tank usage). When these ranges are imposed on a scaled chart, an interesting picture develops (see chart).

In the "3 up, 1 back" formation, only the 4.2" mortar has adequate range to fire from any location in

the area occupied by the BLT. The 81mm Mortar must be fired from several different locations to provide the all-around coverage which may be required. The 106 RR must be located on the fringes of the area to provide peripheral coverage against armored attack. In a formation which provides greater depth to the BLT, such as the "Y," the range limitations are even more glaring than those illustrated here. In such situations there is a more frequently experienced requirement for the attachment of 81s and 106s to the rifle company.

Communications

Radio communication has been the whipping-boy and target of caustic comment for a good many years in this Marine Corps. On either side of the argument, the loyal opposition may tend to cite the extreme. For this reason the subject is introduced reluctantly—and with moderation. The new Marine infantry battalion is equipped with the same radios as the old. There is one difference, however: it has more of them. Using the same radios as its predecessor, the new battalion deploys over greater areas (which require increased range) and, in addition, detaches rifle companies on independent missions. In his more extended formations, 1st MarDiv experiences indicate, the battalion commander periodically must assign battalion level radios (ANGRC 9s) to assault companies, and company level radios (ANPRC-10s) to assault rifle platoons. Since the allowance does not permit this on an "SOP basis," it is a most temporary expedient. The *internal* radio communications of the infantry battalion continue to be one of our problems. Often they restrict the capability for dispersion. Likewise, in broken terrain they are of variable, limited effectiveness. At best, and when fully operable and effective, they are the absolute minimum necessary under the new concept.

Despite certain problems and limitations of the new Marine infantry battalion which have been discussed in this article, including the difficulties of radio communications, one question that can be asked is: "Has this new battalion been provided with the tools needed to do the job,"

The answer is, "Yes." US MC

New missile muscle now for NATO bases!



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HERCULES can transport 90% of
all types of missiles now opera-

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GEORGIA DIVISION, Marietta, Georgia

✦ UNDER THE PRESENT CONCEPT OF a Marine Air/Ground Task Force, Marine Corps aviation is intended to go directly to the objective area with the ground forces and to establish itself ashore at the earliest possible time in order to provide the direct air support required. Many problems face the Marine Corps in carrying out this concept and among them are: what facilities will be required; where these facilities will be located; and who will provide them? In other words, what engineer support does Marine aviation require and from what source will this support be provided?

Aside from keeping carriers in the immediate area, the obvious solution to the problem of providing facilities for Marine Corps aviation would be to land at a point where such facilities are already in existence. Such a solution, however, may not always be possible. If facilities do exist, it is quite likely that they will have suffered considerable damage, neces-

sitating back to an... much improv... ties will probab... in any event, heavy... be a prerequisite. No... ties already available do... ate the necessity for engine... port to Marine Corps aviation.

There is an all too prevalent feeling in the Marine Corps that the advent of the short tactical airfield, utilizing catapults and arresting gear, will solve the engineer problem or reduce it to negligible proportions. This can also be applied to those who point to the VTOL and STOL type aircraft as the solution. Such developments will reduce the engineer requirements somewhat, but will not make them negligible by any stretch of the imagination. The problem remains large.

Conventional or short, the construction of an airfield for tactical aircraft is no small matter. Take in-

consideration the facilities that provide, whether or not we... or whether or not... VTOL or... ways, the... will... exist... the... have... require... available... pleased to... inasmuch as the... reduce to some extent... his work and the time... to produce a usable fa... ever, these things are not... today and, as a force in re... the Marine Corps must be prepared to support the aircraft which are now in its Wings with facilities which can be built of material now

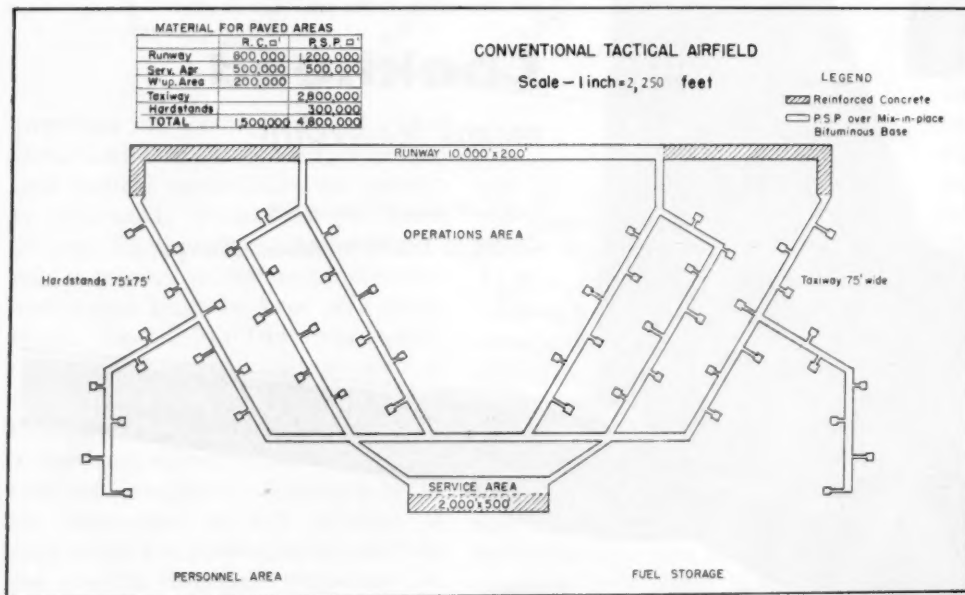
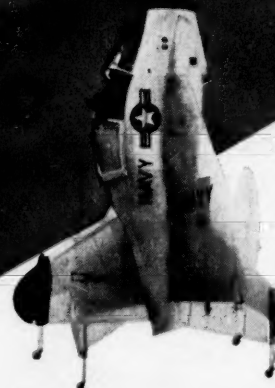


FIGURE 1

LOCATION	AREA	PORT. CEM. (T)	REINF. STL. (T)	P.S.P. (T)	BITUM. (T)	TOTAL
RUNWAY	2,000,000	8,900	400	4,500	1,200	15,000
SERVICE APRON	1,000,000	5,500	250	1,870	500	8,120
WARM-UP AREA	200,000	2,220	100			2,320
TAXIWAY	2,800,000			10,500	2,800	13,300
HARDSTANDS	300,000			1,125	300	1,425
TOTAL	4,800,000	16,670	750	17,795	4,800	40,215 S.T.

FIGURE 2



Engineer Support To Marine Corps Aviation

By Col T. W. Brundage

If it were necessary to build a completely new airfield, the material shown in Figure 2 would have to be brought along with the Task Force in order that construction could begin immediately. Here can be seen the enormity of the logistical effort necessary to support one MAG.

The above would be to provide the minimum facilities for *one* MAG. Multiply this by at least 3 and we will have the bare minimum figures for the material necessary to provide minimum facilities for a MAW. This would disperse the Wing itself to some extent. Dispersing the groups would run the tonnage up enormously. It is here quite evident that, purely from a logistical standpoint, dispersal will have to be the minimum compatible with the situation.

Today there are no experience factors that can be used in determining the time required to build an airfield for tactical jet aircraft under

combat conditions. However, we can refer to an airfield built in the Marianas during WWII (for B-29 bombers) which approached the criteria for a present day operational field. This field required the efforts of one engineer battalion for approximately two and one-half months to develop a field operational by minimum standards.

Obviously, we cannot accept such a time element if we are to have our aviation ashore in time to support the operation. It is believed that by utilizing the most modern methods, by using as little concrete as possible along with pierced steel plank and by using some now available towing vehicle to obviate the requirement for long taxiing of the aircraft under its own power, this time element can be reduced considerably.

Careful location of airfield sites is highly important in cutting down on the earthmoving and grading necessary. Also, consideration must be given to using well compacted sites,

An airfield that would have to be provided to support a MAG as now established would have the general appearance of that shown in Figure 1. This layout gives maximum dispersion that could be expected at one airfield and is of minimum design with regard to length and width. It is constructed using a maximum amount of readily placed, pierced steel plank while keeping concrete to a minimum.

Unless it could be determined that all material would be available at



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such as existing highways and railroad beds, as the nucleus for our airfields. All of the foregoing will reduce the time element and bring it within reason. It is believed that it can be done.

The above statements point up the fact that careful and highly detailed planning is of prime importance in any operation involving our aviation and, unfortunately, too little attention has been given to this sort of planning by the Marine Corps. The office of the Force Engineer at both FMFPac and at FMFLant can accomplish only a small part of the required engineer planning. Totally lacking, also, is anyone on the staff of either AirFMFPac or AirFMFLant or any of the MAGs, capable of taking part in the detailed planning for the facilities which will be required by our aviation when supporting our ground troops during an operation.

It has been proposed that, under the Air/Ground Task Force concept as presently envisaged, a Force Engineer Group be formed to provide overall engineer support to the Task Force as a whole. In view of the facts that the great proportion of this support would be required by Marine aviation and that the Marine Corps is fairly well equipped organically to support its ground troops from an engineer standpoint, such an Engineer Group would direct most of its effort toward planning for and supporting the aviation elements. This it should do and it should work hand in glove with the aviation element in determining the location of the facilities required and the most rapid and economical method of providing these facilities. Many times existing criteria must be ignored and the lessening of existing criteria or the development of new criteria must satisfy the people who are to use the facilities.

Here we run into a stumbling

block. Even if the Force Engineer were capable of conducting planning and carrying out the construction of an air facility, there is practically no one in Marine Aviation with whom he can discuss his plans or methods of construction intelligently. This stumbling block could be removed if our tables of organization were changed so as to allow an engineer section on the staffs of AirFMFPac, AirFMFLant and the Wings. Such an engineer section could be employed most valuably in planning for the engineer needs of these various commands, seeing to it that all planning criteria met the needs of the command and working closely with the engineer forces who are to provide the construction work. The Force in Readiness concept applies to Marine aviation as well as to the Marine ground. Marine aviation cannot be a Force in Readiness if it is incapable of looking to its construction requirements.

Such an engineer section located at the various command echelons of Marine Corps aviation would be an invaluable asset even during periods of garrison duty. It could aid materially in solving many of the logistical problems. It could represent an "Industrial Safety" section which is believed by many to be highly essential under any conditions. It could oversee the testing of the many items of not purely aviation equipment such as geodesic domes that are sent to our Wings for evaluation. It would give the various commands control over the use and maintenance of the many items of strictly engineer equipment that are now organic to aviation. Above all, it could continually monitor the various engineer developments that apply to aviation and keep the command fully abreast of the situation from an engineer standpoint.

Having taken care of the planning

requirements for aviation through the efforts of the Force Engineer Group and the application of an engineer section to the staffs of our various air commands, consider now who will carry out the plans as developed by these worthies. Obviously a plan is no good if it cannot be carried out, so construction forces must be found.

It is not believed that the Marine Corps will ever be able to afford the luxury of having engineers available in the quantity necessary to support our air arm. Nor is it believed that our existing engineers will be capable of doing more than providing backup support to the divisions and force troops, including liaison strips and helicopter landing zones. Construction for tactical aviation requires engineers in a quantity that the Marine Corps is not prepared to provide.

During WW II practically all of our tactical airfields were constructed by the Naval Mobile Construction Battalions and, at one time, the Engineer Regiment of the MarDiv contained such a battalion. It is not believed that such organizations will ever again become an organic part of the Marine Corps but it is believed that the Marine Corps must plan on having its advanced aviation facilities constructed by such an organization. Furthermore, it is believed that the Naval Construction Battalions will comprise a major part of a Force Engineer Group supporting a Marine Air/Ground Task Force and that they should begin to play a part in all of our major exercises.

It cannot be categorically stated that one Naval Construction Battalion will be necessary to provide the facilities for one MAG or that three will be necessary to support a MAW. Too many factors enter the picture and quantity of construction forces will have to be determined for each separate operation. Needless to say, however, engineers in quantity and with many tons of construction material will be required to support Marine Corps Aviation.

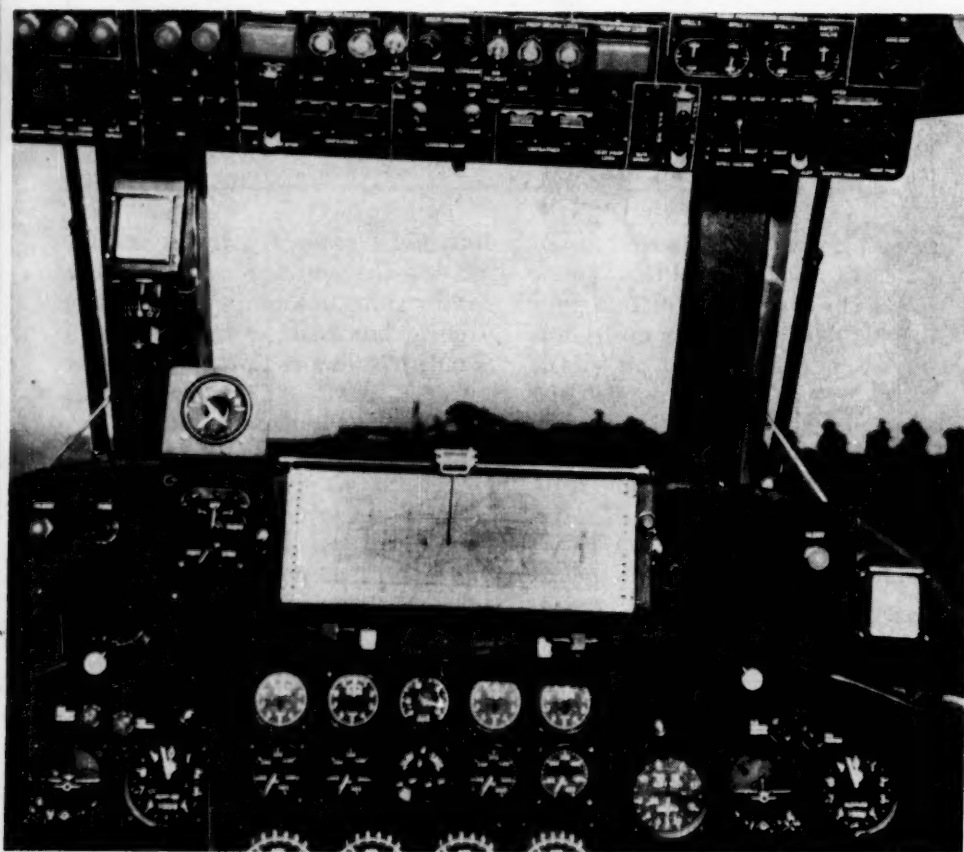
In conclusion, it is hoped that the exceedingly grey status of how Marine Corps aviation is to be supported has been pointed out. It is also hoped that the Marine Corps will determine at an early date the solution or solutions to the problem.

US MC



THE MAN BEHIND THE GREASEGUN... The exploits of the fliers and aircraft that are keeping our nation secure can not be written without proper credit to the unheralded man behind the greasegun. He is a member of a maintenance crew... a crew chief... a plane captain who is content to enjoy the reflected glory of his ship. Something of him flies with every aircraft, and when ship and crew return safely he knows his job has been well done. For he knows that nothing could fly, no pilot could climb aboard without his contribution. Kaman Aircraft recognizes the job these men are doing and gives them a tangible salute by designing helicopters which require minimum maintenance and make the man behind the greasegun whistle while he works.

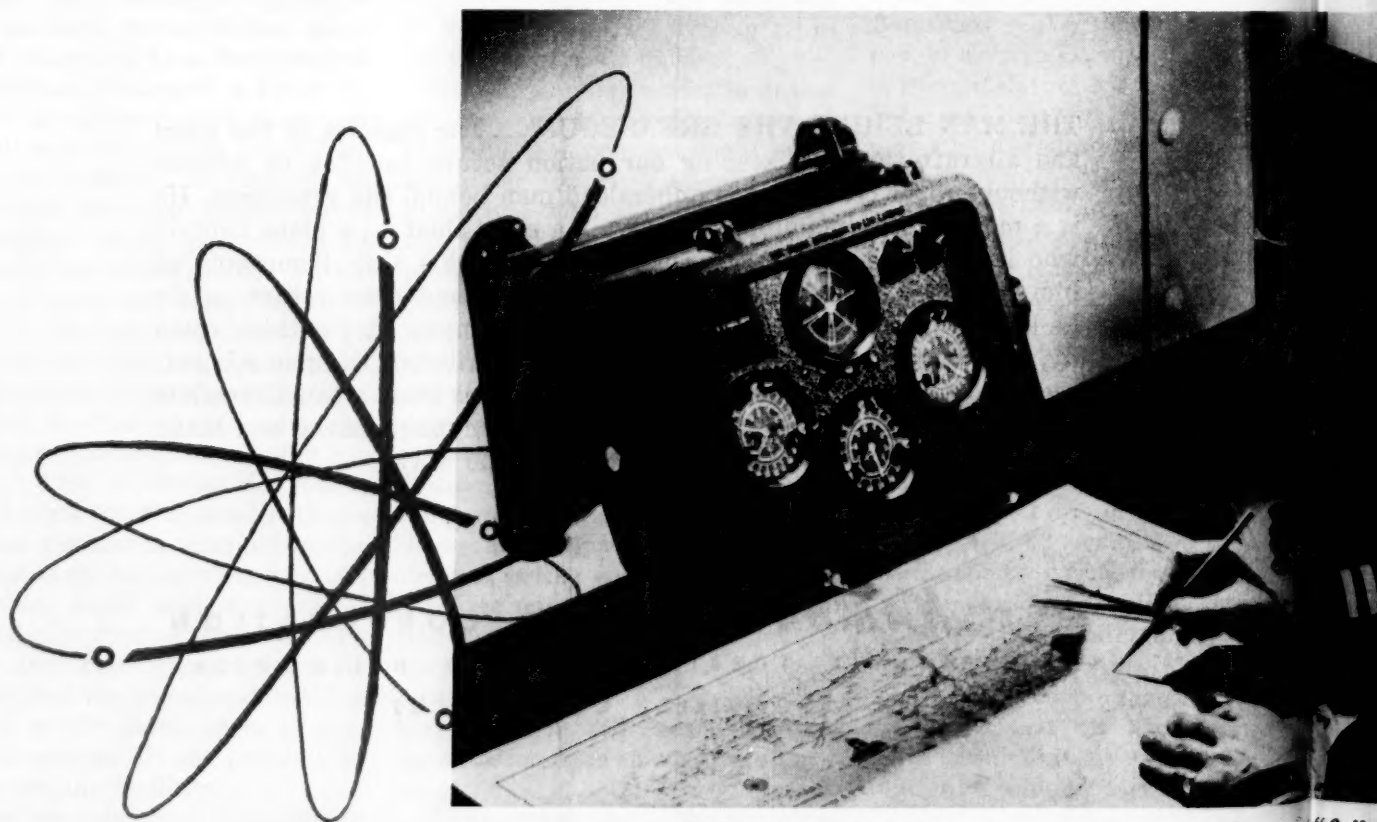
THE *KAMAN* AIRCRAFT CORPORATION
PIONEERS IN TURBINE POWERED HELICOPTERS
BLOOMFIELD, CONNECTICUT



Electronic 'Road-Map' is shown on the instrument panel of a Viscount



A Bendix-Decca flight log unit



Taking a reading from the unit that provides a "fix"



log mounted on a helicopter dashboard



"fix"

✿ A BEYOND-THE-LINE-OF SIGHT NAVIGATIONAL SYSTEM ACCURATE to within 20 feet on or above a battleground has been developed for land and air units of the field army of the future.

Pacific Division of Bendix Aviation Corporation has announced that the Bendix-Decca navigation system, built originally for control of air and marine traffic, has been adapted to "monitor" closely knit tactical operations of infantry, artillery, armor, missiles, and aircraft in modern warfare.

The system, in effect, would provide a field headquarters with an instant "fix" on all fighting units under its immediate command. Tank commanders, troop vehicles, helicopter pilots, and artillery spotters would be provided with a minute-by-minute "road map," whether on the attack or on defense.

On a modern battlefield, the system would be accurate to within tens of feet at all altitudes, behind hills and obstructions, in all weather. It would be the basis for drone guidance, and a key to effective reconnaissance, troop safety and air-and-ground traffic control.

The system also has certain capabilities that make it adaptable to missile operations.

A field commander at headquarters behind the battle line would be provided with a continuous pictorial display visually tracing on standard maps the location and course of fixed-wing aircraft, helicopters, ground vehicles and troops.

The Bendix-Decca system required pairs of "master" and "slave" sending stations that transmit wave patterns occupying precisely known and stable geographical positions to form accurate position lines, or "electronic highways."

These "highways" are picked up by receivers in a vehicle, plane, helicopter or fixed field unit position and automatically computed and displayed visually on standard military maps and charts.

NAA is at work in the fields of the future

Dress rehearsal for survival



Freedom's defense has reached a new frontier—Outer Space. That is why we need new weapons—missiles ...and men in missile-like planes.

Already America's giant missiles hurtle into space—exploring the new frontier, guarding its ramparts.

And hand-in-glove with missiles are our new manned weapon systems. Compressing years of progress into months, America's military and civilian engineers are jointly pushing our new defenses to completion.

Americans in Outer Space

Today a few chosen pilots are preparing themselves. Donning the new space suits, they sit in altitude chambers, or whirling centrifuges, testing man's reactions to a savage new environment. Their plane, the rocket-powered X-15, is being readied.

The X-15's mission is to take a man into space...and to return him to deliver his report. The secrets he brings back will be shared by the Air Force, Navy, and National Advisory Committee for Aeronautics, joint sponsors of the project.

The sinews of space flight

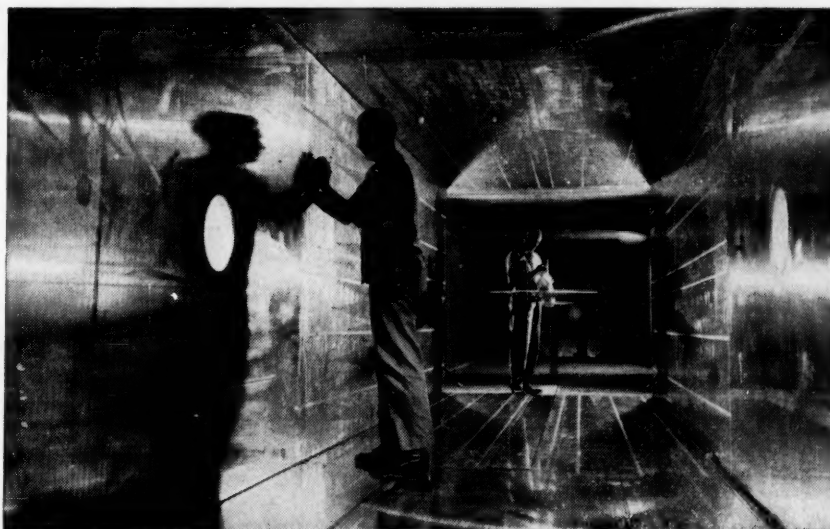
The X-15 is the outgrowth of new technologies developed by North American and its divisions—in guided missiles and supersonic aircraft—in automatic controls and rocket engines. Each is a vital root of the new space flight technology.

NAA's Rocketdyne Division makes rocket engines for the Air Force's Atlas and Thor missiles, and for the Army's Jupiter and Redstone. In fact, every major missile successfully launched in America in 1957 was powered by a Rocketdyne engine.

The Autonetics Division creates automatic control systems for both aircraft and missiles. Only yesterday these tiny fail-proof "brains" were rare technological triumphs. Yet today Autonetics makes them in quantity—with complete reliability.

Weapons—manned or unmanned

Like the Armed Services, North American believes both manned and unmanned weapon systems have their



Space Age wind tunnel tests scale models in a 2,500-mile hurricane. It's first of its kind to be built with private funds.

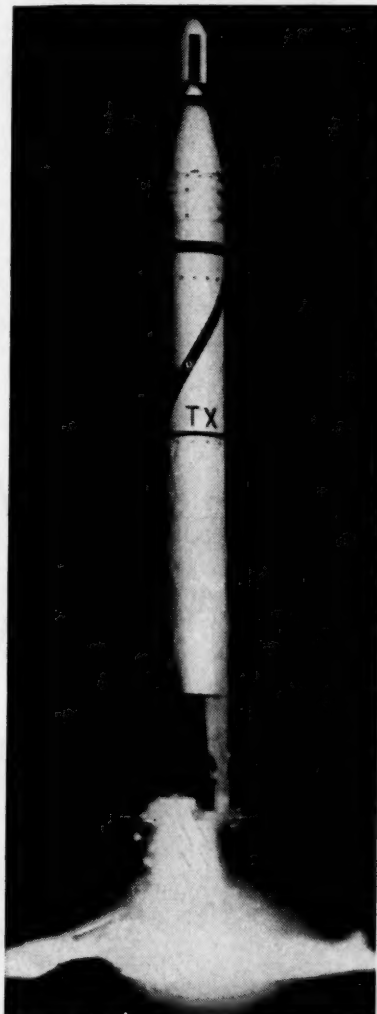
place. NAA's Missile Development Division, backed by 10 years' pioneering missile research, is at work on the GAM-77 advanced air-to-ground missile for the Air Force B-52.

At the Los Angeles Division are two manned weapon systems. The 110A will reach any place on earth at 2200 mph and return to strike another day. The F-108 interceptor's very-long-range radar and atomic missiles will make it lethal to manned bombers and some missiles. It will be a flexible weapon, able to strike at trouble where it starts, before it spreads.

From defense, the arts of peace

North American has not confined its efforts to defense alone. During the past decade it has made great forward strides for the good of all men. The Peaceful Atom, for example, is the field of NAA's Atomics International Division. This division has successfully proved out two nuclear reactors to produce electrical power, both major advances in the drive to put atomic energy to work for mankind.

Today, in North American and its divisions, you'll find as potent a combination of scientists, engineers, and production men as any in American industry. Because they are constantly forging ahead into vital new technologies, their work holds immense promise for science and industry.



Satellite No. 1. A Rocketdyne-built rocket engine gave the Army's Jupiter "C" satellite the critical first-stage boost toward its orbit.

NORTH AMERICAN AVIATION, INC.

SERVING THE NATION'S INTEREST FIRST—THROUGH THESE DIVISIONS



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AUTONETICS



MISSILE DEVELOPMENT



ROCKETDYNE



COLUMBUS



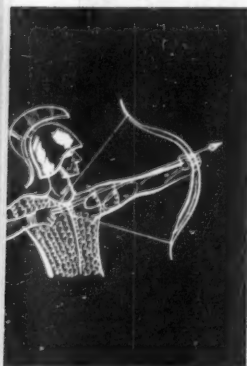
ATOMICS INTERNATIONAL

In this age of modern warfare we hear much of the specialist.

History reveals that he is not something new; quite the contrary, he has always been around.

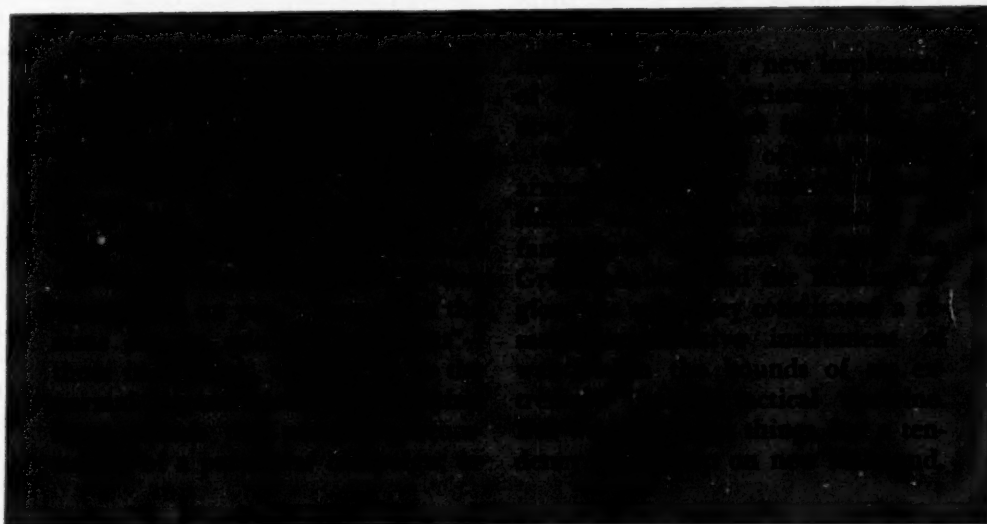
'Specialists'

By Reginald Hargreaves





Part Engineer, Part Artilleryman



in so doing, to create new demands. So it was not long before the Athenian General Iphicrates—who flourished between 400 and 380 B.C.—found it advisable to supplement his ponderous infantry phalanx with a corps of *peltasts*, a speedier and less heavily armed light infantry for reconnaissance purposes and to act on the flanks of the main body. In their turn, the Romans, pursuing the path of conquest “in fresh woods and pastures new,” amplified their heavy infantry of the Legion with a body of lightly-armed, nimble-footed *ferentarii*, designed to serve much the same purpose as the Athenian *peltasts*.

But whatever novelty they possessed in the first instance, it would be an error to regard these *peltasts* and *ferentarii* as long remaining in the category of “specialists.” The new needs had proved enduring and the erstwhile “specialists” in consequence acquired a permanent footing. This is comprehensible enough since, in essence, they both derived from the same parent stock; much as if a heavy-weight and a light-weight boxer had been sired by the same father.

A second and entirely new element was added to the basic military structure when a certain number of auxiliaries were recruited to form a small cavalry corps; another fundamental of anything with any pretensions to being a properly balanced composite army.

It was the demands of siege warfare that brought the first real “specialists” on the scene, in the shape of a body of men, part-engineers part artillerymen, who were entrusted with the task of working the missile-throwing catapults, ballistae and onagers which formed the heavy projectile weapons of the days before gunpowder.

It was soon realized that artillery could also be made to play a useful

part in field warfare. These particular specialists, therefore, also acquired a permanent footing in the battle array; although as a technical corps they remained a little aloof from the mere “footsloggers” and “dung-crushers.” In this fashion there came into being the 3 basic components—Foot, Horse and Artillery—of which every all-purpose army must be constituted.

But the urge to get the better of an opponent by suddenly producing some new combination of arms or novel technical device that would take him by surprise, led to the introduction of yet more specialists, both in siege operations and in open warfare. When Demetrius besieged Rhodes in 305 B.C., for example, the Macedonian engineer corps was called upon to provide “experts” to manipulate the new flame-throwers; in later operations more specialists were demanded to install listening sets to detect counter-mining.

As tactical ingenuity heightened, all sorts of stunt devices—complete with their attendant specialists—were tried out and either abandoned as having no permanent value or took their place in warfare’s increasing repertoire. Elephants, for instance, were made use of, in attack and defense, both by the Greeks and the Syrians, but were found in due course more or less to cancel each other out. The Romans, hearing that the Balearic Islanders were particularly skilful in the use of the sling, recruited a number of them into special cohorts. In the same way, archers from Crete and Numidia were added to the ranks as Roman *auxilia*, where they speedily ceased to be regarded as specialists and were accepted as a normal part of the make-up of a force of all arms. But specialists were still wanted to handle the *polybolos*, the forerunner of the machine gun,

which discharged successive flights of arrows from a revolving magazine.

Julius Caesar’s conquering army of B.C. 57 exhibited a nice balance of all arms; although it is worthy of note that his artillery worked in close co-operation with the infantry: every cohort of 10 men having one catapult; every century, or platoon, a heavier field piece known as a *carroballista*.

In much the same way, the 18th century infantry was furnished with its battalion guns and modern combat teams are strengthened with close support weapons. Caesar’s specialists were mostly employed in the engineering work demanded to add solidity to his entrenched camps, or in siting and constructing the magnificent military roads the Romans were prompt to build in every land they conquered. There were also a number of specialists in signalling; the Romans’ highly-burnished shields being employed to flash messages from hilltop to hilltop on much the same lines as the 19th century heliograph.

A warlike device that called for specialist handling both in its manufacture and subsequent employment was the “Greek fire” invented in 673 A.D. by Killinikos, an Hellenic refugee from Smyrna who had sought the protection of the Byzantine Emperor of Constantinople. In action, “a lump of inflammable material was projected and at the same time ignited, by applying the hose of a water-engine to the breech of the tube (wood, lined with copper) which thus became an integral part of the apparatus.” At close quarters in a sea fight, the effect of this “Greek fire” was appalling, since it was impossible to extinguish it; and as a short-range projectile it must take exceedingly high rank.

Unfortunately, the specialist is very prone to keep his highly technical knowledge to himself and this is what happened in the case of the deadly “Greek fire.” Details of its composition were known only to a few, and when the last of these specialists died, he took the secret with him to the grave. For the “Sea fire” of later days was a very anemic substitute for the compound perfected by the ingenious Killinikos.

With the collapse of Imperial



Maj Hargreaves, M.C. (British Service) is a familiar name to students of military history. A veteran of line and general staff service in France and Gallipoli during WWI, he was retired on medical grounds in 1921. Upon retirement he concentrated on the serious study of history and has authored numerous books and articles in the field of Military Science. He now resides in Nr Basingstoke, Hants, England.

Rome and the Western world's plunge into a lengthy period of darkness and confusion, military organization reverted to its most elementary form. In the early medieval armies that eventually took shape, the "heavy" component consisted of the armoured knights, supported by a certain number of more lightly accoutred men-at-arms. These were backed up by a "rabble of foot" raised under the terms of that feudal service which all fit men between 16 and 60 were under obligation to perform if called upon to take their place in the ranks. In this array, one of the few individuals whose work called for a high degree of specialist skill was the armourer; his well-equipped travelling forge was a standard feature of the line of march. For that matter, if a highly specialized talent be the criterion, then the *Hurrenweibel*, or whore-master, charged with the superhuman task of keeping the swarm of camp women in some sort of order, must certainly take rank among the specialists.

It was the demands of siege warfare that again brought the specialist into prominence; demands that increased enormously in scope with the adoption of gunpowder for the purposes of war. For these strange new black grains were not only used as a propellant in the first elementary missile weapons but were freely employed as a means of reducing fixed defenses. The art of tunneling, to lay the explosive charge, called for the skilled work of the miner; while the carpenter was also brought into service to bolster up the walls and roof of the mine-chamber with balks of timber which were set on fire prior to the explosion of the charge, to help loosen the masonry.

The enthusiastic adoption of the long-bow in the days of England's Edward 1st (1272-1307 A.D.) and the outstanding skill with which his picked archers learned to wield it, brought to the fore a number of specialists to serve the bowman's technical needs. The 6 foot bowstave itself required most careful cutting "out of the heart of a true yew" by the bowyer's skilled hand; while the fletchers who manufactured and feathered the arrow shafts worked in close collaboration with the armourers who beat out, sharpened



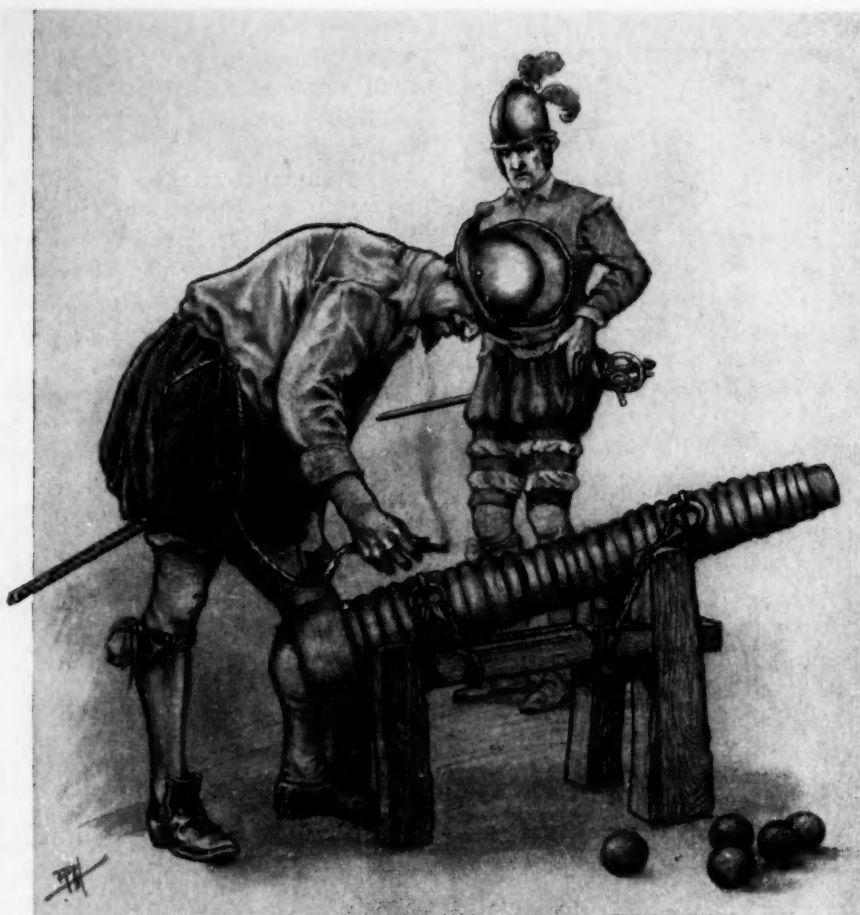
The Specialist Skill of the Armourer

and affixed the arrow-tip. Although a few of such specialists retained their civilian status and continued to work in a private capacity, the majority of them were incorporated into the army and were paid — at "specialist" rates! — out of the military chest.

In some respects, of course, the bowman was himself a specialist, insofar as he wielded a "special" weapon demanding especial skill for it to be fully effective. The fact was recognized by the award of a higher rate of pay than that doled out to the "rabble of foot," although it was on a lower scale than that drawn by the full-blown specialist. Regarded from another angle, the bowmen

were the first really efficient missile dealing troops to take the field; the forerunners of the present-day "foot-slogger" with a rifle—the dogsbody and the victor in every war that has been fought since the firearm became a reasonably reliable implement of war.

The extraordinary way in which the specialist proliferates can best be gauged is by examination of the muster rolls for the expedition to Harfleur organized by England's warrior-king Henry V in 1414 A.D. Apart from the orthodox array of knights, squires, men-at-arms, bowmen and "rabble of foot," the lists include master-gunners, miners, armourers, bowyers and fletchers,



16th Century Specialist — the Artillator

smiths, carpenters, turners, tent makers, masons, farriers, corderers (leather workers), apothecaries, barbers and washerwomen. Add to these the overseers of the artillery, the proviand master (responsible for victualling), the waggon-master, the harbingers (billet-masters), the provost marshal and his staff of tipstaves, the clerks, the cooks and scullions, and the roll of "specialists" begins to take on significant proportions. Yet it would be difficult to determine how this medieval "tail" could have been cut down without hazarding the efficiency of the fighting force as a whole.

Cannon made an earlier appearance on the battlefield than the handgun or arquebus. But when the arquebusier did take his place in the line he was undoubtedly regarded—and treated—as very much of a specialist. Since his weapon was extremely cumbersome and took an inordinate time to reload (to fire and reload the original musket required 56 drill movements), between rounds he had to be protected by a

whole array of pikemen. Had he not been, he would have been cut down or overrun after firing his first shot.

As the infantry missile weapon underwent improvement both in portability and rate of fire, the musketeer was absorbed in the normal battle array; and it was the artillerymen who began to regard themselves as specialists and to claim peculiar privileges and consideration in consequence. The mysteries of their abstruse and complicated craft were not matters in which any benighted "footslogger," of whatever rank, could possibly be allowed to interfere. Thus it is related that when the famous *landsknecht* leader, Georg von Frundsberg, being in supreme command of an army, took the linstock from a cannoneer's hand and aimed and fired the gun himself, the officer commanding the artillery at once came up, put the unfortunate gunner under arrest and bade Frundsberg look after his own affairs and not meddle with those of other people!

In addition, the train of artillery demanded and received an escort of "footsloggers" for its protection—in a mild sense "specialists," since they were armed with a lighter firearm in the form of a fusil which, for a time, called for specialist manipulation.

The grenade was first adopted for military purposes in 1667; immediately a small band of specialists sprang into being, first to prepare the missile and then to make the best use of it in action. Its employment so speedily became widespread, however, that the Grenadier Company soon took its place as an integral part of the battalion organization.

A pernicious tendency arose, however, to draft only picked men to the Grenadier and Light (infantry) Companies. This, naturally enough, had the most detrimental effect on the morale of those left over to make up the bulk of the formation. In any body of men, to single out A— and B— for distinction, if only of nomenclature and dress, is to put a premium on C—, D—, E—, and F—, acquiring a pronounced inferiority complex.

In this particular, things were managed a good deal better with the Horse. For when it was resolved to raise a certain number of Light Dragoons—specialists who were required to combine infantry fire-action with cavalry shock-action—the formations were not recruited out of existing regiments, but raised by direct enlistment.

In the early days of sea warfare soldiers were always drafted aboard the merchant vessels which had temporarily been converted into warships. For it was the seaman's prime responsibility to "work" the ship, the soldier's task to "fight" it, until the moment when the opposing craft grappled and all hands joined in the general *mêlée*. Thus out of what had been a handful of specialist marksmen, a permanent Marine Corps came into being, which assumed responsibility for all small-arms fire and in due course took on the handling of some of the guns. Dovetailed into rather than amalgamated with the ship's company, the Marines proudly retained one unquestionably specialist function—that of conducting all shore operations based on warships, such as

the capture of Gibraltar in 1704, to cite one example only.

The 18th century witnessed few technical advances in weapons of war; but the appearance of the revolutionary armies of France at the battle of Fleurus in 1794 was accompanied by an innovation that undoubtedly called for specialist handling. For high above the ragged ranks of the republican soldiery floated an observation balloon—the first of its kind to be employed on the field of battle. Fitted with a running block and tackle, messages were sent down from the observation car in a leather pouch; the whole device being operated by a specialist squad of French *Genie*.

The only other contemporary novelty that demanded specialist handling consisted of the Rocket Troop of the British Royal Artillery; for the control of these somewhat unpredictable missiles was quite beyond the scope of the ordinary gunner.

The armies that took the field in 1914 embodied those various branches of the Service which the experience of the years had standardized. The first "surprise" weapon came with the German use of poison gas. (The British War Office had long possessed the formula for a poison gas invented by Admiral Lord Cochrane (1775-1860), the liberator of Chili and Peru. They had refrained from making use of it in the Crimea campaign and in early 1914, on humanitarian grounds.) Immediately a number of specialists were recruited for Chemical Warfare detachments, charged with the responsibility of providing protection against the lethal fumes and concerting counter-measures. Strictly speaking, this was not the first time that noxious vapour had been used in warfare. At the siege of Delium in 423 B.C. a gas attack had been made with sulphur fumes; while at the investment of Ambracia in 189 B.C. the Aetolians had smoked out the besieging Romans by burning feathers in their mine-galleries. The Germans employed poison gas in containers on a mass scale, however, and also in shell; and the steps taken to counteract its effect meant that a lot of rather weird people clambered into uniform whose connection with the Fighting Forces had hitherto been

remote in the extreme.

The deadlock which resulted in the 4 long years of trench warfare produced conditions that were highly productive of specialists of all types and widely differing degrees of responsibility and importance. Apart from trench mortar and sniper specialists, in the zone of the armies behind the front line, Town Majors looked after billeting areas, while Claims Officers, who combined some legal training with a command of the Gallic tongue, dealt firmly with the outrageous demands for damages and compensation brazenly put forward by the local community. Baths officers, traffic control officers, forestry officers, salvage officers to organize the collection of scrap from the old battlefields, even an unfortunate junior charged with the repair and disinfection of discarded uniforms, who was known as the Delousing Officer—they seemed to spring up overnight like vigorous mushrooms. And of course every man sent off on detachment to fulfill a "specialist" assignment did his utmost to acquire a Staff and thereafter to ensure its steady amplification. A 2nd Lt, detailed—say, to establish a small depot for the collection of weapons, equipment, unexpended ammunition and clothing from the zone of operations, would start off with one orderly-clerk to attend to any paper work that might conceivably arise. In a quarter less than no time he would be petitioning for another clerk—a junior NCO to supervise the clerical staff—another officer to act as his assistant—a car and driver to enable him to get properly around his area—a senior NCO to run the office, now staffed by 4 clerks and 2 "Lance-Jacks"—another Officer to assist his assistant; the last demand being accompanied by the suggestion that as local officer-commanding, he should at least be awarded temporary promotion to Captain. In a trice a full-blown "department" had come into existence, with its ever-increasing flow of paper and its never-ending demands on manpower and *matériel*. Firmly and solidly dug-in, this pretty little nest of specialists speedily assumes an air of permanency and consequence it was never intended to acquire; and the very fact that it goes on functioning tends to acclimatize

everybody to its presence and discourage dispassionate enquiry as to the validity of its continued existence. Moreover, it can be taken as axiomatic that, as a departmental organization becomes more and more elaborated, it becomes more and more concerned with running itself, very often to such a degree that it appears to have time for very little else.

Military organization is founded, *au fond*, on the tactical doctrine prevailing at the moment; this in turn is based upon the correct relationship between weapons. Thus in 1919, with trench warfare, as it was hoped, a thing of the past which all future wars would be careful to avoid, the Machine Gun Corps and the Trench Mortar Batteries of the 1914-'18 period were disbanded; these 2 weapons being regarded as no more than components amongst the immediate support weapons for the battalion as reorganized for war-of-movement.

It was a war-of-movement army that took the field in 1939 and it was accompanied by no specialists other than those which technological improvements in weapons, mechanization and methods of intercommunication, had brought permanently into being. (Thus with the British Army, the erstwhile Signal Section of the Royal Engineers had been reorganized into a separate Corps; while mechanization had so greatly increased the number of technicians concerned with care and maintenance, that they too were divorced from the Sappers and reorganized into the Corps of Royal Electrical and Mechanical Engineers.)

With the evacuation of the bulk of the British Expeditionary Force from Dunkirk and with England under siege, the urge to strike back at the enemy, even with nothing more than pinpricks, led to the formation of the first Commandos—"specialists" in amphibian raids and the sabotage of "No. 1 priority" enemy installations. Controversy has raged about the method of their recruitment ever since.

Field Marshall Wavell categorically affirmed that, "I have never believed in the formation of the Commandos with men picked from a number of units. I believe that a complete living unit, taken and

trained for the especial work required, with the elimination, if necessary, of the weaker men, would produce far better results."

Given the necessary time for the specialist training required, this contention is hardly to be gainsaid. But to ensure similar results with the minimum of delay, a body of hand-picked volunteers is more likely to be got speedily ready for action than a comparable number of unsifted run-of-the-mill rank and file. It was doubtless this consideration which governed the organization of the original Commandos, as well as the US Rangers.

On the other hand, given the necessary time—and the power to weed out the patently unsuitable—and pretty nearly any troops can be trained to carry out virtually any mission. In the Burmese campaign, for example, admirable pioneer work was done in the matter of long-range jungle penetration by Orde Wingate's hand-picked Chindits. At the same time, some perfectly ordinary "hostilities only" Divisions were subjected to long-term indoctrination in that form of jungle fighting in which the Japanese were known to specialize. And it was these perfectly ordinary, everyday Divisions which, after intensive but unhurried training, cleared the Burmese theatre of the Japanese invaders.

Naturally enough, certain specialist assignments call for qualities and aptitudes not to be found even in the most enthusiastic but previously untutored volunteer. In the Western Desert the prime qualification for an individual aspiring to join the Long Range Desert Group in their highly rewarding perambulations behind the enemy lines, was an ability to navigate by the compass—the only method of ensuring progress in the right direction in a howling waste possessed of practically no distinguishing topographical features whatsoever.

At all times there is a tendency on the part of field commanders to rely on certain *corps d'élite*, such as the US Marine Corps or the British Brigade of Guards, when an operation is to be undertaken which demands particular intrepidity and superbly disciplined co-ordination by deliberately organizing *sturmtruppen*, to be employed when there

was a particularly hard nut to crack and then taken bodily out of the fray, to be fattened up again for the slaughter.

There was nothing original in the idea, which had been tried out by the Macedonian General, Alexander of Argyraspides, in the fourth century B.C. But as with Alexander, so it was with the Germans—the very existence of especially selected storm troops in their midst so lowered the morale of the balance of the troops as appreciably to diminish their fighting value. If you keep on implying that a man is not good enough to tackle a particular job, it will not be long before he begins to agree with you.

As perhaps is only to be expected, it is in the back areas and on the lines of communication that war-time conditions breed an unending stream what, in the broadest sense of the term, could be described as specialists whose *raison d'être* no peace-time establishment ever so much as contemplated. At the height of the operations in North Africa in 1943, for example, the fol-

lowing could be found in and about the base and on the line of communications and flourishing like the proverbial green bay tree. Railway transport officers, train-conducting officers, embarkation officers and officers commanding detachments aboard troopships. Then there were pseudo specialist officers at staging posts, transit camps, feeding halts, ablution centres, post hostels and frontier check points. "Welfare" demanded the services of yet more specialists to produce newspapers, operate radio stations, distribute films, create live entertainment, set up rest camps and organize libraries, canteens, gift shops and P.X. posts. There were antiquities officers and horticultural officers, pools of psychiatrists, interpreters and court-martial presidents. There were district claims officers, locust control and malaria control officers; officers commanding dog companies, mule companies and camel trains. There were officers in charge of camouflage, mobile bath units, delousing installations, tent repair teams—shades of Henry VI!—road sign



17th Century Specialist — the Marine

maintenance units, salvage teams, petrol can factories, flour-milling units, port-operating companies, and local procurement units. And each and every specialist officer was supported by the lesser satellites of his Staff.

It is not suggested for a moment that a single one of these specialists was not engaged in work that contributed, to a greater or lesser degree, to the general wellbeing of the fighting troops. Yet it is impossible entirely to suppress the feeling that the dog had grown a monstrous big tail, that bid fair to end up by wagging him.

The changing face of war, its new tactical demands, necessitating new techniques, inevitably brings into existence new formations to fulfill a particular function. Starting as specialist contingents, they frequently achieve a permanent niche in the over-all establishment, as has been shown. Some of these units, with their call for exceptional qualities and resources, continue to rely on volunteers even under conditions of universal national service. The qualifications that make a good parachutist, for instance, are not to be found in every man who dons a uniform. The same is doubtless true of the 77th Special Forces Group at Fort Bragg; "all volunteers trained," in the words of their commander, "to drop behind or infiltrate through enemy lines to act as and to organize guerrilla forces and skilled in all the techniques of evasion, escape and survival."

Very much the same sort of force was led by the enterprising Otto Skorzeny between 1942 and 1945; and amongst its achievements was

the temporary immurement of General Eisenhower in his Headquarters, and the daring rescue of Mussolini from his mountain-top prison.

In any future conflict of anything like major proportions the employment of these unorthodox Special Service troops will be inescapable. For as Skorzeny himself has pointed out, "Another world war will bring the strategy of wide open spaces to the fore. Long, connected fronts will not exist; we shall have to think as well as talk of everyone being in the front line. The General will share the dangers of the Private in the foxhole; the battle will swirl round both alike. This means that strategic operations with limited forces will be able to play a foremost role; it may even be a decisive one.

"Again, between the major war theatres there will be a wide space for lightning strokes which may overturn a slower-moving adversary. . . . By bringing into play methods which have not yet been fully tried out, another war might be ended almost before it has begun."

Given the right number of hand-picked, well-trained and determined specialists in this new type of all-out warfare, and the statesman in his office would be no safer than the General in his Headquarters; a Government centre might be as easily sent up in smoke as a field depot of ammunition. With opponents as unscrupulous as those with which the Western Powers are most likely to find themselves confronted, conflict under the old "Queensbury rules" will unquestionably give place to warfare "with no holds barred"—the very state of affairs in which the type of specialist visualized by Otto

Skorzeny will come grimly into his own.

Such a formation would not be easy to recruit, for the qualifications demanded of its personnel would be as numerous as they would be varied. To rate as a Special Service man would not only call for exceptional qualities of icy courage, but for inexhaustible resource, boundless ingenuity and a stern self-discipline that never relaxed till the task in hand was accomplished. The command of several languages would be no more than an elementary precaution, a quick eye for country and the lay-out of streets and buildings as essential as a thorough knowledge of all the means of sabotage that human inventiveness has devised. A compound of cold-blooded destroyer, play-actor and stoic, with a patience that Job himself might envy, and the powers of endurance of an Arctic explorer. Given these, you would have the foundation on which the ideal Special Service man could eventually be erected. And the value of the finished article would be virtually beyond computation.

We cannot afford to sit down and wait for war to abolish itself. Far better—and wiser—to accept it as being in the logic of history and leave it to posterity to prove us wrong. In the meantime we can best busy ourselves in so perfecting our organization for conflict that whatever sort of war should be sprung on us, we should have the right kind of troops to fight it to a victorious conclusion—however unorthodox the specialists, that the shape of things to come clearly indicates will have to be embodied in our ranks.

USMC



Try Big Ben

THE ADMINISTRATIVE ROUNDELAYS we get into today remind me of the old story of the Nine o'Clock Gun. Today, as they have for many years, the Marines at Portsmouth Navy Yard (Va.) fire a single cannon shot each night at exactly nine o'clock. In years past it served as a curfew—a stern warning for teenagers to get off the streets. Today it marks nothing but an old tradition but the local citizens still set their clocks by it.

Some years back a Corporal was given charge of the gun. It was his responsibility to care for it and see that it was fired each evening exactly at 2100. He was conscious of his responsibility and each afternoon he would walk downtown to Portsmouth and carefully set his watch by the big clock that sat in the local watchmaker's window.

One day, after a year had passed, he was having his watch cleaned at the watchmaker's and as he was leaving he asked the proprietor if the clock in the window was accurate.

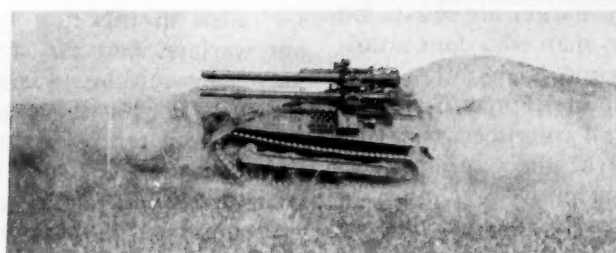
"It certainly is," stated the watchmaker. "I check it every day."

"How do you set it," queried the Corporal, "by Naval Observatory Time?"

"No sir, not me. I set it every night by the nine o'clock gun."

Fred Stolley, CWO (Ret)

By LtCol Martin J. Sutton



why the ONTOS?

AT THE TIME THE RIFLE, 106mm, propelled, M-50, Ontos is emblematic of the antitank structure of the Marine Corps. It was the primary antitank weapon of the Marine Division.

It is doubtful if the advent of any single weapon or piece of equipment in recent years has provoked the controversy that surrounded the Marine Corps' adoption of the Ontos. Actually the weapon of choice was, and still is, in some quarters, reminiscent of the "Old Corps" lamenting the passing of the '03 and belittling the appearance of the M1. The very mention of the Ontos was at one time the signal for the eruption of the most vociferous of arguments. Although many dissidents have been grudgingly won over, others steadfastly maintain that Ontos is not for the Marine Corps. Why then Ontos?

It was unanimously accepted in the Marine Corps that the previous structure of the antitank company left much to be desired. The inclusion of one Medium Gun Tank Pla-

toon and one 75mm Recoilless Gun Platoon of 4 weapons was unwieldy, inflexible and lacking in the desired mobility. The medium gun tanks of the former unit had become a familiar fixture around all too many regimental CPs, simply for the lack of better employment. It is true that the 75mm Recoilless Gun Platoon performed excellent service and had become a familiar and useful weap-

on; however, the requirements of modern war have more or less rendered it obsolete for its regimental role. In the main it is a question of penetration.

The next query may well be: "Well, granted that the old structure was not entirely satisfactory, why Ontos?" The answer is simply that it is the best available weapon for the primary AT role at the present

time. As soon as the chorus of protests subsides, let's analyze the foregoing statement. An antitank structure should be built around a weapon possessing good mobility, excellent penetration, high first round hit probability, relatively light weight, and be characterized by simplicity, low cost and economy of operation and maintenance. Ontos boasts all of these prerequisites. At this point someone undoubtedly will ask: "What about the maximum effective range of the weapon?" It must be readily admitted that the maximum effective range of both the 75mm Recoilless Rifle and the Medium Gun Tank exceed that of Ontos; however, range assumes a lesser degree of importance if the penetration is not sufficient to defeat enemy armor. Additionally, at what average range will enemy armor be taken under fire? If statistics of historical engagements are any criteria the maximum effective range of the 106mm recoilless rifle is quite sufficient. Also, improved ammunition, and improved rifles (both spotting and main armament) give promise of increases in this area in the near future.

Invariably in any such discussion the question of why Ontos instead of the US Army's concept of one 106mm recoilless rifle, or BAT, will come up. At first such a question appears quite logical, particularly when it is an indisputable fact that the BAT weapon is helicopter transportable. These arguments are countered by the following:

1) It is contended that only in the rarest of battlefield situations will armor be fought by jeep mounted weapons. It is submitted that tanks will not (and cannot) be successfully engaged from jeeps. If this is accepted, then the majority of such engagements will be fought from the BAT ground mount. To dismount the 106mm recoilless rifles from their jeep carriers is to forsake their limited mobility.

2) On the other hand, Ontos offers a highly mobile tremendously hard striking weapon, lightly armored and possessing an ability to negotiate certain terrain that is impassable to both tanks and jeeps.

3) The Ontos is presently capable of being lifted in transport type aircraft.



LtCol Sexton enlisted in the Marine Corps in 1941 and was commissioned in 1942, after serving as a Drill Instructor at Parris Island, S. C. He has served as: Plt Cmdr, 3rd Raider Bn; Co Cmdr, 3rd Bn, 4th Marines; Instructor, Junior School; CO, MB, Newfoundland; S-3, 3rd Marines; CO, 1st Bn, 3rd Marines; CO, Recon Co, 3rd Mar Div; Asst Head, Infantry Unit, Opns and Trng Branch, HQMC; Instructor, Senior School. He holds the Silver Star, 2 Bronze Stars, Air Medal and Purple Heart.

4) Additionally, rifles on the Ontos are provided with a quick detachable feature which permits them to be dismounted if the tactical situation so warrants.

In the final analysis, it is submitted that the Marine Corps, by virtue of Ontos, in reality possesses both BAT and Ontos. This statement is made because of the dismountable feature of the weapons which are integral to the basic carrier. Also, of course, the dismountable weapons may be transported by helicopters; either as ground mount weapons or mounted on Mechanical Mules, Mitey Mites, or jeeps.

Let us now briefly examine the structure of the new Antitank Battalion; the one which was recommended by the FMF Organization and Composition Board and which is currently incorporated within the 1st Mar Div's provisional structure. (See Figure 1.)

It will be noted that the Antitank Battalion is organized with 3 antitank companies, of 3 platoons each, providing a great deal of flexibility insofar as employment is concerned. Certainly there is no disputing the fact that this organization offers tremendous advantages in firepower, flexibility and mobility over the "old" regimental antitank company. It is considered that this organization also readily adapts itself to a wide separation of units as envisioned on the battlefield of tomorrow.

The T/O structure is based on extremely austere personnel criteria. An examination of the antitank company will serve to familiarize one with the organization of the battalion inasmuch as there are 3 such companies in the battalion. Company headquarters is composed of a headquarters section, a maintenance section and a fuel and ammunition

section. The majority of the headquarters section is composed of communications personnel; the maintenance section is composed of a minimum number of personnel considered necessary to perform organizational maintenance on the vehicles, armament and communications equipment; and the fuel and ammunition supply section consists of 3 supply teams which are designed to supply each of the 3 antitank platoons.

Each antitank platoon is organized with 5 Ontos, each company with 15 Ontos; thus there are a total of 45 such weapons present in the battalion structure.

There has been a concerted effort to indoctrinate everyone to the basic fact that Ontos is *primarily* a defensive weapon. This effort, of course, has been motivated by the fact that the basic vehicle is relatively thin-skinned and is not an assault vehicle in the true sense. In an effort to preclude misuse of Ontos, and the resultant loss of large numbers of this versatile weapon, efforts have purposefully been directed toward playing down its offensive capabilities.

Although it is readily admitted that the primary mission of the Ontos units is that of engaging tank targets, it should also be borne in mind that these vehicles may greatly assist the assault elements by employment in their secondary role. The accuracy, shock and penetrating power of the basic rifles is such that the reduction of pillboxes and strongpoints of point target nature may be facilitated by such an assault role. The very nature of the vehicle dictates that they take full advantage of hull defilade firing positions, execute numerous and rapid displacements, and avoid exposing themselves to direct fire weapons.

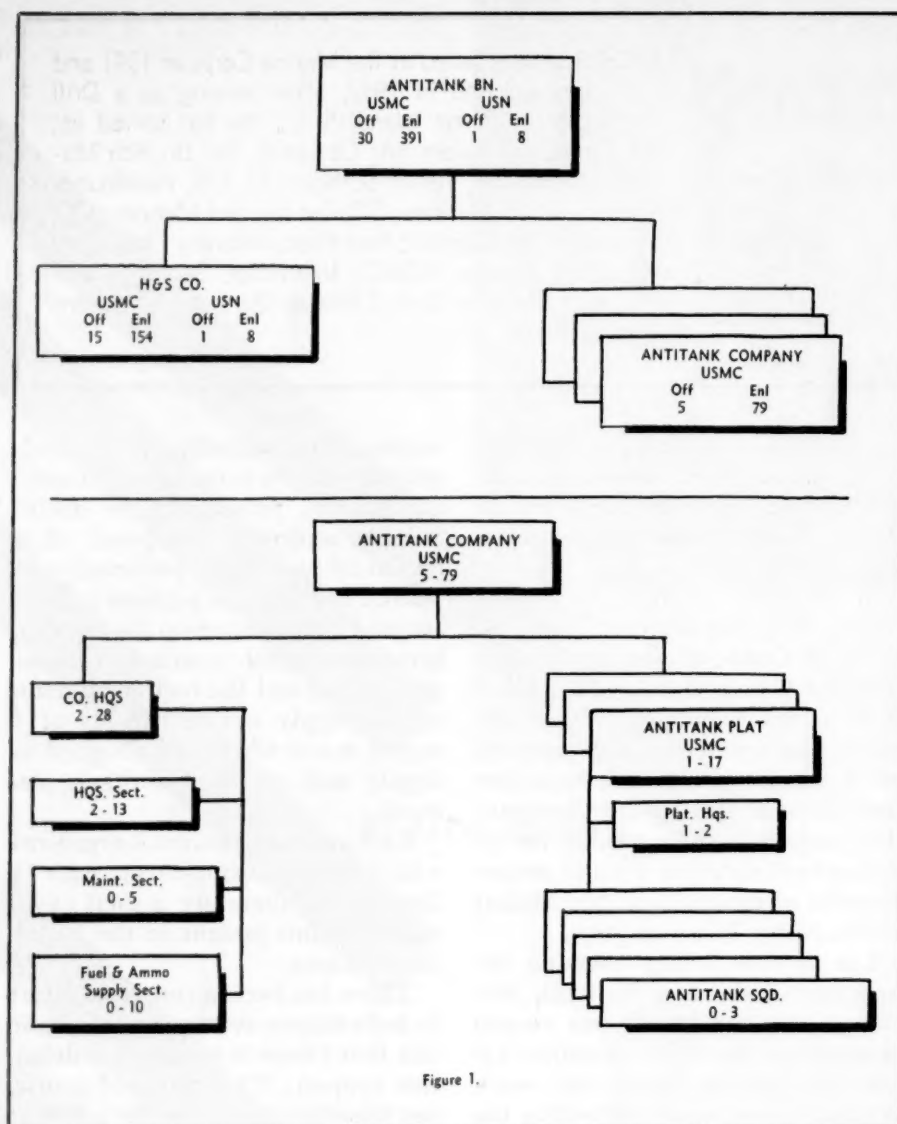


Figure 1.

The inherent defensive role of Ontos is enhanced by the battlefield mobility possessed by the basic vehicle. As already mentioned it is capable of negotiating terrain which is often impassable to both tanks and jeeps. This capability permits Ontos to be located in positions of readiness from which to move to oppose enemy tank attack(s). In a static defensive situation the flexibility possessed due to the dismountable feature of the rifles manifests itself. Depth, surprise and shock, insofar as the antitank structure is concerned, may all be enhanced as the result of a combination of ground mounted and vehicle mounted 106mm recoilless rifles in certain tactical situations.

The Ontos vehicle is considerably lighter and smaller than the M48 Medium Gun Tank, and thus has the capability of being lifted in assault type landing craft and trans-

port type aircraft. Also, because of its relatively light weight it may be transported aboard virtually all types of amphibious shipping. Such employment lends greatly to flexibility insofar as the antitank capability is concerned and insures the presence of a "tank killer," capable of destroying armor during the early stages of an amphibious operation—a period particularly susceptible to an enemy armored attack.

The Antitank Battalion, or companies thereof, equipped with Ontos will be characterized by a high degree of mobility, tank-killing firepower and flexibility of employment. These characteristics combined, will contribute greatly to an increased offensive, as well as defensive, capability of the MarDiv.

It is considered pertinent to inject this caution—the Ontos should not be compared to a tank. It is not technically correct nor valid to com-

pare the two. All too often the understandable fallacy of comparing the two is attempted. This is partially due to the fact that the Medium Gun Tank Platoon was originally replaced (in the Regimental Anti-tank Company) together with the 75mm Recoilless Gun Platoon, by "The Thing."

Additionally, the recommendation of the FMF Organization and Composition Board to transfer the Tank Battalion to Force Troops category has been interpreted by some to mean that Ontos is replacing the tank. *Nothing could be further from the truth.* If it had been intended that the tank be replaced by Ontos then the fate of the former type unit would have been disbandment rather than a change from an organic divisional unit to Force Troop Units. The overriding desire to make the MarDiv air transportable, and the infantry regiment entirely helicopter transportable, led to the recommended antitank structure.

The primary mission of the Ontos is to defeat armor. It cannot accomplish this by fighting enemy armor face to face and being openly exposed. It is only one weapon, a new one, in the overall antitank structure of the MarDiv. It is mandatory that close coordination be achieved between tanks and Ontos in countering enemy tank attack. The latter weapon also possesses a lesser, but nonetheless definite, offensive capability.

The advantages accruing to the division commander possessing an antitank battalion of 45 Ontos, or a total of 270 106mm recoilless rifles, are quite easily discerned. Additionally, the provisional T/Os provide for 8 identical rifles, single mounted on mechanical mules, to be organic to each infantry battalion. Thus, the overall antitank capability of this division is tremendous.

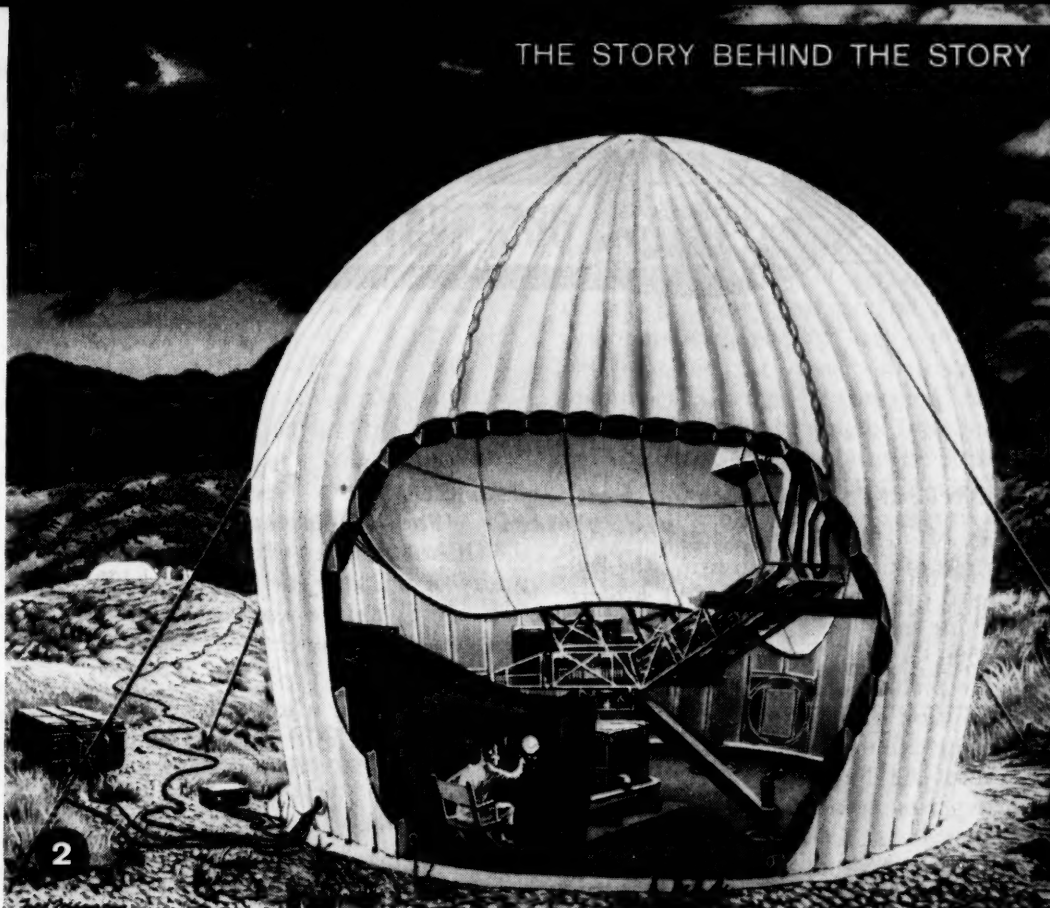
It may be said that Ontos permits the introduction of a versatile weapon that vastly enhances the overall flexibility, firepower and mobility of our antimechanized structure, and is in consonance with our vertical lift concept.

Although faint cries may be still heard in the wilderness for the '03, we all learned to use the M1 to maximum advantage. So it is with "The Thing"—Enter the Ontos.

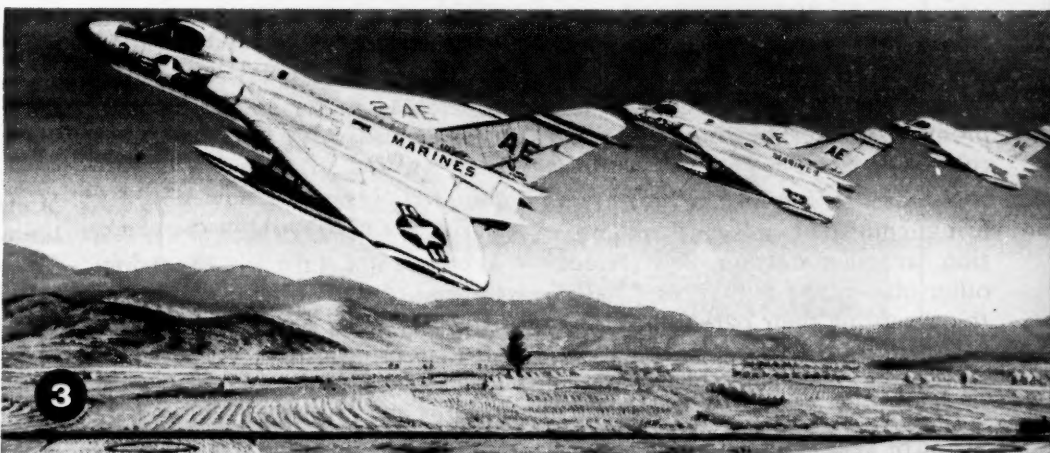
US & MC



1 MARINE CORPS helicopters hover over TEW site, drop antenna, generators, radome and combat control shelter. Miniaturized components contribute to light weight.



2 WITHIN TWO HOURS TEW system is in operation. At approach of enemy aircraft, signals from antenna feed through monitored console to combat interceptor shelter nearby. Here range azimuth and altitude data are presented on plan-position indicators for command decision on interception.



3 ALERTED BY TEW, Marine jets scramble to intercept enemy. Extreme range of TEW provides extra minutes to throw up air umbrella over target area. Fighters carry air-to-air missiles like Sparrow I developed by Sperry.

NEW PORTABLE RADAR TO GUARD MARINE OUTPOSTS

Can be flown to site, set up in 2 hours

As fast on the move as a fighting Marine is the new "TEW" (tactical early warning) radar system being developed by Sperry for the Marine Corps. Only one-fourth the size and weight of conventional radars, TEW is easily carried to battle areas by helicopter, cargo plane, truck or amphibious vehicle. Within two hours, an 18-man crew can erect the TEW system and place it in operation.

Designed to detect both close-in and distant supersonic aircraft and missiles, TEW also determines their height—com-

bining the functions of two present radar systems. Its operation is almost completely automatic, requiring only one operator to monitor its control console. Radar console and rotating antenna are housed in an inflatable radome, while the combat interceptor control shelter which completes the TEW system is located nearby. Both can withstand the rigors of arctic or tropical climates.

With its very long range and portable construction, TEW provides the Marines with the means to extend the nation's

defense perimeter and insure added protection for key installations and outposts. Like the new super-radars developed by Sperry for the Navy's missile cruisers, TEW is an important contribution to our growing power to deter aggression.

SPERRY *GYROSCOPE COMPANY*
Great Neck, New York

DIVISION OF SPERRY RAND CORPORATION



KENTUCKY TANK CREWMEN

✻ MCS, QUANTICO—Recent observations of tank crewmen firing the 200-yard phase of .45 cal. M3A1 sub-machine gun fire as specified in MCO 1500.1B provided a rather spectacular picture. Firing from the prone position and maintaining a perfect sight picture, their rounds plowed into the butts. After considerable experimentation it was discovered that by selecting an aiming point such as a number stake, the top of the target, a spot of earth or a patch of grass, hits could occasionally be scored on the "D" target. Although "Margaret's osnoburg underwear" was most prevalent in the morning breeze, the oscillating targets did produce spotty showings of varicolored disks.

Needless to say, no Marine enjoys firing consistent misses. Ammunition, weapons, weather, and various other objects are maligned, alluded to concerning their parenthood, and verbally described as possessing the powers of no other inanimate object.

In this case the weapon bore the brunt of verbal brutality. The general consensus was that it was "no damn good."

This is only partly true, and could have been determined from facts and estimates gleaned from FM 23-41 (SMG Cal. .45 M3 and M3A1) and TM 9-1990 (*Small Arms Ammunition*) without approaching the 200-yard line with the weapon.

Consider the following. The weapon has 100-yard fixed peep sights with no adjustment, a built-in angle of elevation of 6.2 mils. At 200

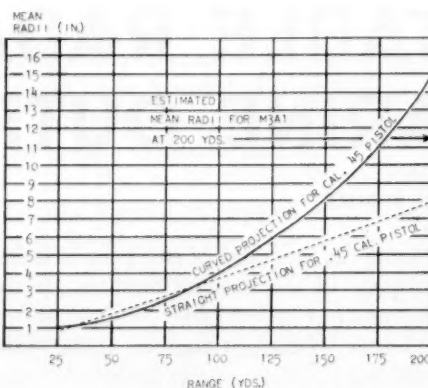
yards the angle of elevation is 13.2 mils. This automatically provides the shooter with an excellent opportunity of utilizing his initiative and Kentucky windage knob in aiming 4.2 feet above the desired point of impact.

Another factor which must be considered is drift. Although no figures are available for this weapon, the old, faithful Thompson drifted about 6 inches right at 200 yards, so we will theoretically impart this trait to the M3A1.

Our shooter now is given another prerogative of moving his aiming point that distance to the left.

Providing he has a weapon perfectly zeroed in for 100 yards, calibrated eyeballs with feet and inches etched for 200 yards and a perfect sight picture, he will now secure a hit. But not necessarily in the black.

We have not discussed dispersion. Again no figures are available for this weapon. However, for a bench rested .45 Cal. pistol, a curve begins which if projected to 200 yards gives a radius of dispersion somewhere around 15-17 inches. For theoretical



purposes, a radius of dispersion of 12 inches will be assigned the M3A1.

This means that our tank crewman with everything perfect, aiming at a point which is 14 inches above and 6 inches to the left of top center of the "D" target will lob his rounds into a circle, in the center of the target, 2 feet in diameter. This is 5 inches larger than the height and 6 inches shorter than the width of the 5-scored black.

The conclusion reached then is that the weapon is non-effective at 200 yards. However, no one has a gripe about its action at 100 yards and lower. It is accurate, fast firing and perfectly suited for its intended use. The tank crew uses it to fight on foot, evacuating a destroyed tank, defending a disabled tank or in the hands of night listening posts and sentinels in the assembly area.

In general, it is a last ditch survival weapon utilized to protect the tank crew much as each crewman uses his pistol for self defense. For longer range firing a light machine gun is utilized. Very few situations can be visualized where the range fired in combat would exceed 100 yards. If such a weapon is needed it should be a different weapon.

It is recommended that the course be revised. It is harmful to teach a Marine to fire aimed-fire beyond the limitations of his weapon. It is harmful to teach him to fire utilizing nebulous aiming points, especially when the very action of firing aimed-fire denies the shooter observation of the target.

It is recommended that the range for slow-fire be reduced to 100 yards and that an "A" target be utilized. The remainder of the course is considered sound.

This will eliminate the need for calibrated eyeballs and Kentucky windage. It will decidedly improve the vocabulary of the tank crewman, enhance the prestige of a fine little automatic weapon and allow some of our Marines to shoot expert.

The highest I've seen is a low sharp-shooter!

Capt H. E. McKinney

★
The GAZETTE will pay \$15.00 for each letter published in the Observation Post
★

BLOW UP THE MARINE CORPS!

• MCS, QUANTICO—For the past 10 years the Marine Corps has been engaged in a tremendous change-over of its employment tactics, techniques and equipment in order to be prepared for combat in the atomic era. As a result, in regard to equipment, a major question has arisen again and again: "Is it helicopter transportable?" Because of this question we have already seen the advance of a new type of equipment into the supply system of the Corps, inflatable gear, and to keep the Marine Corps abreast of these rapidly changing times we may well see inflatable equipment incorporated into our supply system in the future that will revolutionize accepted practices.

Years of research and development by commercial concerns have resulted in the production of low pressure inflatable products ranging from life rafts to full scale aircraft—light, durable, labor saving equipment.

Which one of us hasn't wrestled directly with, or supervised the erection of a canvas tent in the field? Half of the time it is discovered in the middle of the operation that the hard-to-handle bulk of canvas was inside-out or faced in the wrong direction. When finally erected they require outside ditching and black-out insulation around the bottom, work details that consume a great deal of effort and valuable time. As a result many units have, and still employ, the practice of sending tentage out to the known maneuver area prior to the commencing of the problem so as "not to hold us up on D-Day."

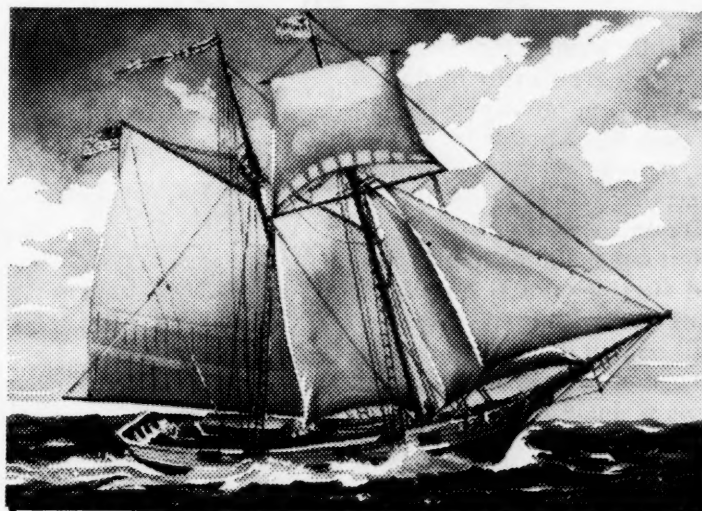
Now there are available inflatable huts that can be erected *single handed on any ground in less than 3 minutes* with a small electric blower which can be connected in seconds to the battery of any military vehicle. They can also be inflated with hand or foot pumps in 30 minutes or less. Tests have shown they are perfectly stable in high winds, can be quickly heated and are completely waterproof even in tropical storms. These low pressure frameworks, with their fabric coverings, are designed to withstand the rigors of military service and most of them have, under reasonable conditions, a storage life of up to 15 years. Look at the com-

parative results between currently utilized tentage and an inflatable item now available:

	30-Man Inflatable	30-Man Canvas
Erection time	3 min	45 min
Personnel req.	1 man	6 men
Weight	185 pounds	1670 pounds
Packaged	4'x18"x18"	5'x4'x3'
Poles required	none	1-20', 2-14' 4-6'4"

Even greater than the advanced unit requirements for temporary shelter is the tremendous problem of providing temporary shelter for rear echelon units and their functions. A vast requirement exists here for rapid provision of cover for supplies, personnel, and such functions as aircraft maintenance, and special weapons assembly. For these there

are now available a number of inflatable structures, ranging in size from 8 feet long by 40 feet wide and 20 feet high to structures 120 feet long by 80 feet wide and 30 feet high. Their light weight and cube appear to have several desirable features and advantages over conventional temporary storage and large personnel shelters. It is highly probable that the cost of such structures might be less than the continual repacking and represerving of supplies now in open storage at Marine Supply Centers such as the MCSC, Barstow, California. They do not require long range planning; can be taken down, transported and re-erected quickly on another site with a minimum of effort. They do not require technicians for erection or



LOW COST PROTECTION. One of the first in a long line of distinguished U.S. ships, was the MASSACHUSETTS. Built in Newburyport, Mass. in 1791. Weighing 70 tons and costing \$1000 dollars she protected America's Coast.

Eighty-eight years later, NAVY MUTUAL AID ASSOCIATION was founded. The purpose was to give low cost protection to members of the Navy, Marines, Coast Guard, and their families. For SEVENTY-NINE YEARS NMA has continued to provide this LOW COST PROTECTION.

Write us today for our free booklet that will explain the full services and benefits of NAVY MUTUAL AID to you.

ELIGIBILITY. All permanent and temporary officers and warrant officers of the Navy, Marine Corps, and Coast Guard, including reserve officers on extended active duty, and not over 62 years of age, are eligible.

BENEFITS IN FORCE.....\$160,000,000
ASSETS\$ 35,000,000



Navy Mutual Aid
ASSOCIATION

NAVY DEPARTMENT WASHINGTON 25, D. C.

maintenance, and appear to have a life expectancy well beyond current requirements for a temporary structure. In combat operations, especially those employing the Marine Corps' new concept of amphibious warfare which calls for wider dispersement of units, water is a vital factor, possibly meaning the difference between success or failure. Because of this, highly mobile water purification units, ranging in size from 2-man portable jobs up to truck mounted battalion-size, that will permit organizations to utilize water organic to their combat area, have been envisaged, produced and are being tested. However, as presently operated even the most efficient Marine water point requires considerable personnel effort and time to put it into operation, what with erection of tanks, clearing of ground, etc. There are now, under test, inflatable water tanks which will eliminate a great many of these current water point problems. These items are especially suitable for utilization in remote, rough or mountainous terrain. For example, there is an inflatable 5,000-gallon tank that requires but one man one minute to erect, and after erection 3 men can handle this item with ease! In addition it will remain stable on a slope.

Knowing that aviation cannot afford to lose a single life that it can save, and being aware of the risks involved in the majority of rescue missions, commercial concerns have developed inflatable aircraft. This concept provides a real answer to aiding downed flyers, the inflatable aircraft can be dropped to trapped aviators, who in turn can inflate them and be safely airborne in mere minutes! Two-place models are even now being tested which means that if non-flying personnel were trapped a pilot can be dropped into the area with the inflatable aircraft to ferry the personnel out.

New types of inflatable equipment are being devised and produced every day. It is the job of every Marine to analyze each development in this field that he encounters, or hears of, and bring it to the attention of the Marine Corps. We *must* develop open minds towards this new facet of construction, for we have entered in a new era of warfare where highly mobile assault units will play the dominant role. Your idea of how to

"blow-up" the Marine Corps may well be the one that could save it in the future.

Capt J. W. Harker

TWO-WHEELED MULE

✱ MCS, QUANTICO — As the art of war goes forward, the only permanent weapon on the battlefield is man himself. Machines appear, evolve, and are superseded by new and more deadly machines. Such a sweeping change as our adoption, in the Marine Corps, of the modern concept of amphibious operations is sure to see old weapons replaced or pushed to the rear, and new ones introduced.

We see this trend already in the employment of tanks, artillery, and antitank weapons. Strange new vehicles are examined and tested. Mechanical Mules, Mighty Mites, Otters, and One-Man Helicopters are familiar words in development circles. But there is one machine we haven't evaluated lately: that little-known, often feared means of transportation, the motorcycle.



Unfortunately we won't be first with the idea, we'll be closer to being last. Red Chinese troops debarking from helicopters use a lightweight motorcycle which could give new mobility to our own helicopter-borne units.

We are alone among the major nations in our failure to utilize this fast moving, economical, rough and ready vehicle which goes off the roads as well as on, which requires almost no maintenance, and which can be hauled by the dozens in our helicopters. England, Germany, Russia, China, all have their dispatch riders, their convoy patrols, and their reconnaissance scouts. Yet with the great stress we place on lightness and mobility, the Marine Corps has not evaluated this lightest and most mobile of all vehicles.

Before you old China Hands start telling me about the pre-WWII motorcycles you used to ride, let me ask "Could you lift those old iron horses over a log?"

The new lightweight motorcycle is a different breed of animal. Weighing slightly over 100 pounds, it can carry a heavy payload. Most modern equipment is light enough to mount on a rack on the cycle, on a pack on the rider's back, or both.

For example, a new commercial single sideband radio set is expected in about a year which will weigh 35 pounds and give a communication range of more than 50 miles. With a companion engine-generator, a really mobile long-range set could be made. Here is a possible answer to the communication problem of the deep reconnaissance party.

Local wire lines can be laid up to one and a half miles in a very short time by motorcycle, and can be "troubleshoot" even faster.

Traffic control is a natural for a motorcycle, which can snake through and around congested lines of vehicles on narrow roads.

We know that we are going to need courier service in our future operations, and there is something attractive about a machine which goes 100 miles on a gallon of gas, does it faster than a jeep, and is not restricted to the road net.

In addition to these obvious uses, situations will certainly arise where patrols and reconnaissance parties can make use of these vehicles, which can be lifted in quantity by a helicopter.

Pre-WWII type motorcycles will not do the job, primarily because they are too heavy to lift, and because they are not really much more mobile cross-country than a truck or jeep. The tactical motorcycle which this article envisages weighs slightly over 100 pounds, can be manhandled over obstacles, and can go almost anywhere that a man can walk. With its 45 to 50 mph top speed, it is not a highway machine, but the flexible gear ratios and short wheel base give it the ability of a goat off the road.

Such a vehicle is available today, and might well turn out to be a valuable part of our concept of a mobile, hard-hitting Marine Corps.

Maj P. W. Barcus

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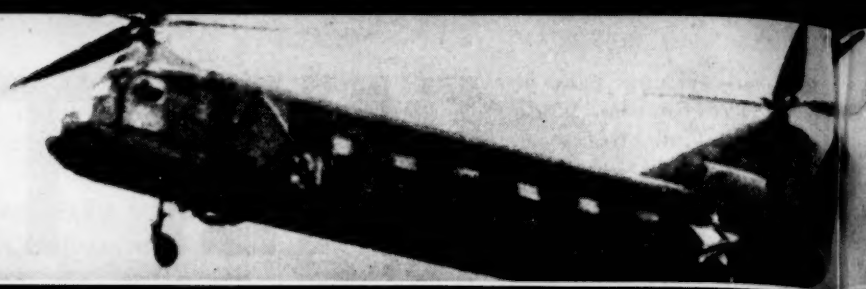
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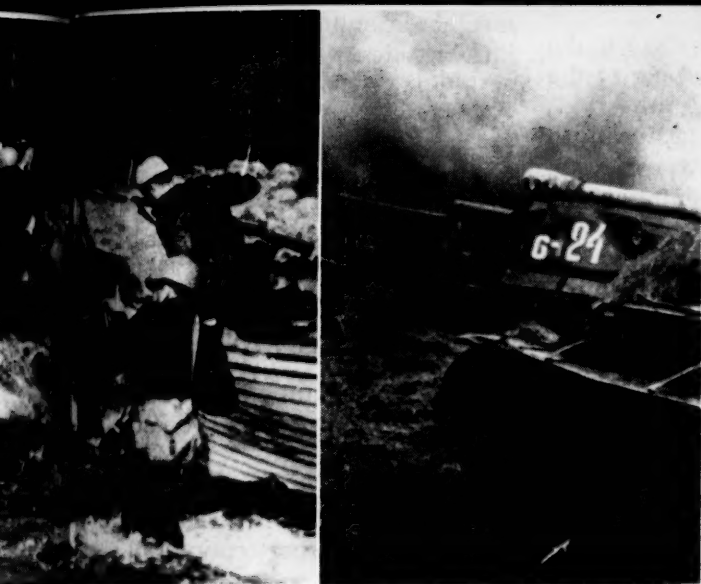
STRATEGIC

OPERATIONAL

TACTICAL



NE ON AMPHIBIOUS OPERATIONS



By Dr. Raymond L. Garthoff

✿ EMPHASIS ON THE COMBINED OPERATIONS OF LAND, sea and air forces has continued as Soviet military doctrine has evolved to meet the needs of the nuclear age. Recognition of the crucial requirements for inter-continental offensive and defensive capabilities, and strenuous efforts to build such capabilities, have not been at the expense of meeting the demands for large, modern ground, air, sea and missile forces, to conduct theater campaigns. Finally, not only does total war, in the Soviet view, require such "theater forces" as an irreplaceable component, but in addition possible limited and local wars require ready strength for rapid commitment.

What, in the Soviet doctrinal view, is the role of landing operations?

"Naval landing operations," stated the authoritative classified General Staff organ *Military Thought* in 1955, "are one of the forms of combined operations conducted by forces of the navy, land troops, aviation



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and airborne troops." Continuing, this limited-circulation source declared: "The necessity of conducting naval landing operations is predicated above all on the scale of contemporary wars, developing over enormous spaces and drawing into their orbit almost all the countries of the world. In the course of struggle between opponents separated by seas and oceans, the armed forces of the combatants must overcome substantial water areas before they can be on hostile territory. Only by this means is it possible to throw large masses of troops on the shores of the opponent and create the conditions for seizure of the territory of the enemy and his military resources." It is not difficult to imagine what "opponents" the Soviets are discussing. And it is significant that they are even now considering the problem of seizure, by amphibious assault, of the US.

In addition to this ambitious ultimate strategic objective, the Soviets are well aware of the importance of landings for flanking operations of land armies, seizure of island objectives, and crossing of large internal water barriers. And thus the Soviets conclude that "in contemporary wars naval landings can have extremely wide application."

Amphibious landings are classified by the Soviets into 3 categories: strategic, "operational" and tactical. The main factors determining category are 1) the mission, and 2) the size and composition of the forces used.

"Strategic landings," once again as defined in the 1955 Soviet General Staff discussion, "are usually made with the objective of invasion of the enemy's territory and creation of a new front of armed conflict. Usually they occur in the absence of a land frontier with the opponent. Large scale operational formations (an Army or several armies) enter the composition of the strategic landing.

... Successful accomplishment by the troops of a strategic landing can affect the outcome of a campaign or even the war as a whole." Interest in *strategic* landings was virtually nil in Soviet discussions of a decade ago; now it is important.

"Operational landings occur in the rear of a maritime grouping of the enemy in operational depth of his defense, for combined action with the troops of a Front [Army Group] in encircling and annihilating the enemy. Operational landings can also occur for the seizure of islands, naval bases, ports, and other important military and economic targets on the enemy's territory." Such a landing may involve one or more corps.

Finally, tactical landings are effected "with the objective of cooperation with the [land] troops in the breakthrough of the opponent's tactical zone of defense, and also for the seizure of small islands and important objectives on the coast. The composition of a tactical landing is determined by the mission, and may be as much as one corps."

Before we turn to Soviet views on the operating doctrine for landing and anti-landing operations in the nuclear era, it may be useful to review briefly the status of the Soviet Marines, and their role.

The Marines are called "naval infantry," and as such are part of the Soviet Navy and its Fleets. The functions of "naval infantry" include coastal artillery and anti-aircraft artillery in coastal areas and at naval bases — now armed with surface-to-air missiles as well as conventional guns. The "naval infantry" also is the nucleus for coastal defensive field forces and offensive amphibious operations, and it is this component in which we are interested here, and which we shall term "Marines," although the Soviets do not use the word.

In WWII the Soviet Marines were

swelled by rapid training and redesignation of seamen whose ships were either sunk or inoperable; up to 25 brigades, of about 3,000 men each, were activated. However, the amphibious operations actually undertaken were all either very small scale (up to one regiment) or, in a few cases, large scale river crossings. Rarely was there active opposition. The most important were in the Crimea in December 1941, largely across ice. Most landing operations were, in fact, nothing more than diversionary operations on a limited scale. Since the war, a professional Marine force of an estimated 50,000 men has been maintained, organized into brigades.

In large-scale landing operations the Marines would be employed for the initial echelons and beach seizure, and then followed and succeeded by specially trained Army troops. Small scale tactical or special operations may be performed by Marine forces alone. In all cases, once the mission was performed the Marines would be relieved or withdrawn, not committed to extended land campaigns. Their specialty is the landing assault.

The Soviet Navy is presently weak in landing craft, but there are indications that this shortcoming will be remedied.

Thus the current Soviet landing capabilities are limited, and do not by any means offer an intercontinental threat. But in the longer run, the Soviets may develop large scale amphibious forces and long-range transport such as mammoth nuclear powered submarines and seaplanes.

In addition to seaborne landings the Soviets are, of course, interested in (and preparing for) airborne operations. As the General Staff discussion stated: "Airborne troops can conduct independent operations in seizing the most important targets and regions on the territory of the enemy. In addition, they participate in combined operations, for example in naval landings in which they can have the mission of immediate support of the [seaborne] landing itself."

The importance of air support is, of course, recognized as very great. In addition to seeking local air supremacy, it would be used for support strikes against the enemy's land,

shore, and naval forces present, and against interdiction targets. Aerial reconnaissance is not discussed in detail, but it is specified. Finally, "In addition, Long Range Aviation [the Soviet Strategic Air Command] and aviation of the Reserve of the Supreme Command can be assigned for support of large-scale landing operations."

Attention is given to the many particular features of planning an amphibious operation: geographical features, selection of debarkation points, hydrographic and meteorological conditions, hostile defense deployment, problems of supply, etc.

The stages of a landing operation, as distinguished in Soviet doctrine, are: 1) the preparation, 2) embarkation, 3) sea movement, 4) battle for a beachhead, 5) landing of the main forces, and 6) fulfillment of the mission of the landing. The importance of this sequence of stages is stressed in terms of the vital need to meet the tasks of each stage fully and on time. The primary responsibility of each arm varies for each stage, and in the actual landing stage "ships together with aviation suppress the hostile defense on sea and land and create the favorable conditions for the landing and seizure of a beach-

head on the hostile shore." Atomic weapons are seen as especially useful against the opponent's strong defenses.

Two problems in effecting the landing are stressed. One of these is that "the impossibility of simultaneous landing of the entire landing force raises the danger of its defeat in detail, despite an overall superiority in forces over the enemy." Limitations on freedom of maneuver are appreciated, and emphasis is therefore placed on rapid development of all successes. Thus as an important exception to the general rigid insistence of Soviet military doctrine on fulfilling the original plan of operations, they now have come to decide that in exploiting a success "it may prove expedient to effect the landing of the main forces of the operation not on the initially planned sectors, but on those sectors where success was marked." For this purpose in particular, high speed landing craft are held to permit rapid maneuver. If large artillery and tank forces are to be included, the possibilities for such sudden shifts of landing are lessened.

Concentration of landing forces is considered a main advantage of the attacker, who has the initiative and

preferably surprise, while the defender must spread his forces more widely. But here is the greatest new problem caused by nuclear weapons: concentration is still essential, "however, the threat of atomic blows by the enemy makes necessary the concentration of transports and landing vessels in the area of the landing with a calculation such that a single atomic explosion will remove the least quantity of forces and weapons from action."

A second technique directed at reducing the effectiveness of the opponent's use of nuclear weapons is "the simultaneous landing in several points on the coast," although this "greatly complicates the command of the landing forces at that stage of the operation."

Maximum achievement of local air and sea supremacy is advocated as the chief measure to reduce danger of atomic attacks on the landing force, before and after getting ashore.

The former Soviet emphasis on naval gunfire support is now believed to be shifting to increasing attention to naval surface-to-surface rockets and guided missiles in a fire support role. Artillery support during the landing itself is recognized as particularly important. Aviation support is directed especially against the opponent's rear strongpoints, reserves, and communication lines.

Support prior to the landing is restricted by the requirements of surprise, which is actively sought in all such actions. Soviet landing doctrine has always favored night operations to maximize surprise and concealment. Infrared sights and devices are used both by Marines and army troops. Now, too, "the use of radar eases significantly night landings, but it also makes it possible for the enemy to detect the landing ships in time, and thus makes difficult the attainment of surprise." No answer is given to this dilemma.

The importance of unified central command is emphasized, with a joint staff. The naval task force commander has command until the landing is effected; then the overall landing force commander—in a large scale joint Marine and army action, the army commander.

One clearly crucial problem not discussed in detail in the 1955 General Staff organ is the use of atomic



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weapons in support of the landing operation. The Soviets have, however, made use of an interesting technique to discuss this question. US Marine Corps doctrine and maneuvers are described with considerable specific reference to the various ways of using nuclear weapons in support of a landing. Such discussions ordinarily are introduced, and concluded, by propagandistic statements such as the following: "It is hardly necessary to prove that the preparation for large-scale naval landings is nothing else than preparation for aggressive operations, for the seizure of the territories of others" ("Landing Operations in the Plans of American Admirals" (*Soviet Fleet*, 5 Jan 1957); see also "The Aggressive Direction of the Combat Preparation of the US Marines" (*Soviet Fleet*, 5 Sept 1957). But in addition to such charges, serious interest is shown in our developments of concept and weapons. The

second article noted above reviewed "Operation Marlin," and described the *Thetis Bay* and our concepts of the employment of helicopters, the "Ontos," and the T-101 SPAT. While the other services in the Soviet armed forces also take an interest in parallel American developments, in particular the Soviet Marine specialists seem to recognize the superiority of the US Marine Corps and are striving to learn from us.

Such, then, are the available published indications of Soviet thinking on conducting landing operations. There are gaps, and less specificity than we would like. But there are, as we have seen, a number of interesting features of their approach.

What of the other side of the coin, what are the Soviet views on measures to defeat the enemy's attempts at landing operations? On this subject, too, an authoritative discussion appeared in 1955 in *Military*

Thought. In discussing this mission, there was more concrete examination of the uses of nuclear weapons.

"Anti-landing operations occupy one of the important places in the general system of armed conflict," begins the discussion. "The significance of anti-landing operations is predicated on the constantly growing role of naval landing operations."

"Contemporary counter-landing operations," states the Soviet General Staff organ, "are significantly distinguished, in their means of organization and employment of the forces participating, from operations conducted in the recent war. This is due primarily to the growth of technical equipment of all arms of the armed forces in the postwar period, and also to the appearance of new armaments and above all of atomic weapons."

The first major effect of nuclear

weapons is the requirement placed on the defending forces to anticipate in their deployment and operations the enemy's use of nuclear strikes in support of his landing attempt. This "demands of the defender the seeking out of new forms of conducting combat operations and execution of special measures securing the preservation of high combat capability of the forces and means assigned to the counter-landing operation." These measures, insofar as the Soviets have specified them, will be reviewed below.

But there is, of course, another side to the influence of nuclear warfare on such operations. The Soviets thus note that "the employment of atomic weapons in counter-landing operations creates exceptionally favorable conditions for the achievement of its objectives in a short period." The major reason for this optimism on the effectiveness of nuclear support to counter an enemy landing is specified as "the large quantity of ships and aviation necessary for a seaborne landing." The examples given are the Anglo-American Sicilian operation of July 1943, and the Normandy invasion of June 1944—the former with 2,500 warships and landing craft, the latter with over 5,000 warships and about 4,000 landing craft.

The Soviets lay emphasis on closely coordinated actions of all arms in a counter-landing action, as in a landing operation. "Consequently, success in a contemporary counter-landing operation can be achieved only by the united efforts of the ground forces, navy, and air forces acting by a single plan and close combined action with each other." And accordingly a single joint command must be established. The Soviets conclude that if the main forces of an army Front (Army Group) are assigned to the planned counter-landing operation, the Front Commander is usually given the joint command, and the Navy (and Marine) elements are subordinated to him. "In theaters where, due to unfavorable natural geographical conditions or other reasons the quantity of ground forces and their combat operations are limited, command of the counter-landing operation can be given to the Fleet Commander... and the ground and air forces designated or drawn into participation in

the operation are operationally subordinated to the Fleet Commander."

Following Soviet doctrine on the stages of a landing operation, the stages of a counter-landing operation are also divided into the following: 1) attacks on the enemy's landing forces in the areas of concentration and embarkation, 2) attacks on the forces at sea in transit, 3) the repulse of the landing, and 4) annihilation of the enemy on the shore.

The main means of attack on the hostile forces in the embarkation stage is by air. In the sea transit stage, the main means is submarine attack. Action by surface vessels is assumed "under favorable circumstances," but in the relation of forces the emphasis on submarines is understandable. Air attacks also would continue.

Attacks on the landing task force in these 2 stages, in the Soviet view, "can deal the landing forces significant losses, and in some cases even compel the enemy to call off the landing." However, they conclude that this result cannot be expected or counted upon "in most cases." The expectation is that attrition through such attacks will weaken the landing force so as to facilitate its defeat in the subsequent decisive stage. The reason that the Soviets do not favor the main strike in these initial stages is that the enemy will probably have local superiority at sea, "since without this a contemporary landing operation has practically no chance of success. Under such conditions the dealing of the main blow on the landing forces in the regions of their concentration and in transit at sea can not always be considered expedient, since such an attack will not secure the objective of the counter-landing operation. However, with the availability to the defending forces of atomic weapons, such attacks under contemporary conditions can sometimes be extremely effective."

Thus the Soviets currently believe that usually the decisive stage is the actual landing: "the outcome of conflict against a naval landing will usually be decided at the moment of the landing or even in the course of the combat actions on shore, the main burden of which devolves on the ground forces defending the shore." With new weapons capabilities, "defeat of the opponent's landing can

be achieved by dealing powerful artillery and air strikes with atomic weapons." The reference to "artillery" means both shipborne and especially coastal rocket and missile artillery. The Soviets have recently (in 1957) specifically referred to the assignment of ballistic rockets to coastal artillery (and naval coastal, as well as other, antiaircraft artillery). In particular, areas on the Baltic coast and around key naval bases and parts have been assigned substantial conventional and rocket coastal artillery. Conventional coastal and field artillery is said to be useful especially in direct close range fire against the landing forces.

"The fundamental counter-landing defense of the littoral," conclude the Soviets, "consists of the ground troops, and its reliability depends above all upon their correct employment." They have "the main role beginning with the start of the naval landing." As we noted earlier, in the Soviet doctrinal view "the most favorable conditions for dealing the main attack are created in the approach of the naval landing to the region of the debarkation and in the debarkation of the force onto shore."

The critical landing stage is recognized to present possibly decisive opportunities for atomic strikes not only to the defender, but also to the invader. "In these cases the defender must in the shortest possible time close the breach opened in the defense by means of transfer of forces and means from secondary sectors, and subsequently with the arrival of reserves from depth, to make attacks on the landed enemy force, encircle it, and annihilate it."

Air action is recognized as playing "a most important role," and the Soviets conclude that without local air supremacy it is "extremely difficult and sometimes even quite impossible to gain victory in land or naval combat without achievement of aerial supremacy." This is, therefore, the primary air mission. The Soviets stress the great difficulty of this task since the attacker will provide substantial air support to his landing operation. Hence they stress the concentration of defending air forces at the estimated points of main effort. Also, attacks on the enemy's air bases, including aircraft carriers, are advocated as a key part of this task. Finally, in addition to counter-air

actions by aviation, surface and submarine attacks will be made to destroy enemy aircraft carriers.

The air supremacy, and air defense and cover, missions are apparently assigned higher priority than air actions against the landing force itself. Supporting air attacks against the enemy troops landing and ashore are also, of course, contemplated. Again in such strikes stress is laid on concentrated attacks on the main enemy force. Naval torpedo bombers are emphasized for this role. Attention is directed to maximum utilization of the range capabilities of naval air forces — all, be it recalled, land-based. The present Soviet light bombers and torpedo-bombers (the IL-28 and Tu-14) have a range of up to 750 nautical miles.

Considerable emphasis is laid on advance preparation of defenses against "the most likely" areas for enemy landing assaults. Both stationary and mobile defensive forces are urged. On a strategic scale, location of air and naval bases as well as ground forces is calculated on their effectiveness for this mission. In unimportant coastal areas defense is

limited to "lesser forces, and in some sectors can be restricted to covering forces or even observation alone."

The defense must prepare, especially in permanent fortifications and in protecting reserves, for atomic defense, since these are considered likely atomic targets of an attacking force. Dispersal of troops to reduce the effectiveness of atomic strikes is recommended, but with the important provision that "however, the dispersal of forces must not hinder their massed employment in the course of operations against the main sector."

"Engineering preparation of the terrain," meaning a whole span of permanent fortifications, "plays an important role in effecting direct defense of troops from atomic attack." Coastal artillery should also be mounted on mobile tracks to permit dispersal and mobility in shifting its pattern of fire to the key sectors as well.

"The depth of counter-landing defense is achieved by structuring many lines of defense, and deep echeloning of the ground troops. The presence of strong second eche-

lons and reserves possessing great mobility will provide the high activeness of the counter landing operation." These second echelon and reserve forces are usually held some distance from the shore, "in areas providing concealed deployment and swift advance to any threatened sector for counterattacks on the landing forces in the event of their debarkation on shore." The disposition of such reserves "must satisfy conditions of dealing attacks on the flanks of the main force of debarking troops of the enemy, without substantial regrouping."

A series of prepared defensive positions are held in readiness for the second echelon, especially for cases when the first echelons may be "substantially weakened as the result of atomic strikes by the attacker."

Thus, we see that counter-landing operations are, when possible, based on strongly prepared positions, with coastal rockets and artillery, and substantial air and naval support. While attacks on the enemy landing force at embarkation and at sea are embraced, these actions are not relied upon at the expense of stress on forces to meet and defeat the enemy landing force if possible in the course of debarkation.

In conclusion, we see that the Soviets have recently, if belatedly, begun to come to grips with the problems of landing and counter-landing operations in the nuclear age. The nature of the potential theaters and relation of forces leads them, at present, to concentrate on heavy defensive preparation to repel landings, and offensive preparations essentially in terms of flank support to large land campaigns. But even now, it is clear that the interest in strategic landing operations — an interest lacking a decade ago — reflects their contemplation of possible campaigns against Scandinavia, England and Japan. Finally, it is possible that even now the Soviets are thinking about problems of invasion of America.

Attention to Soviet amphibious doctrine, and particularly to the stress on combined seaborne and airborne operations, is most useful to understand more fully, possible Soviet use of their capabilities. The absence of significant past achievement in this field must not blind us to possible future Soviet actions. US MC

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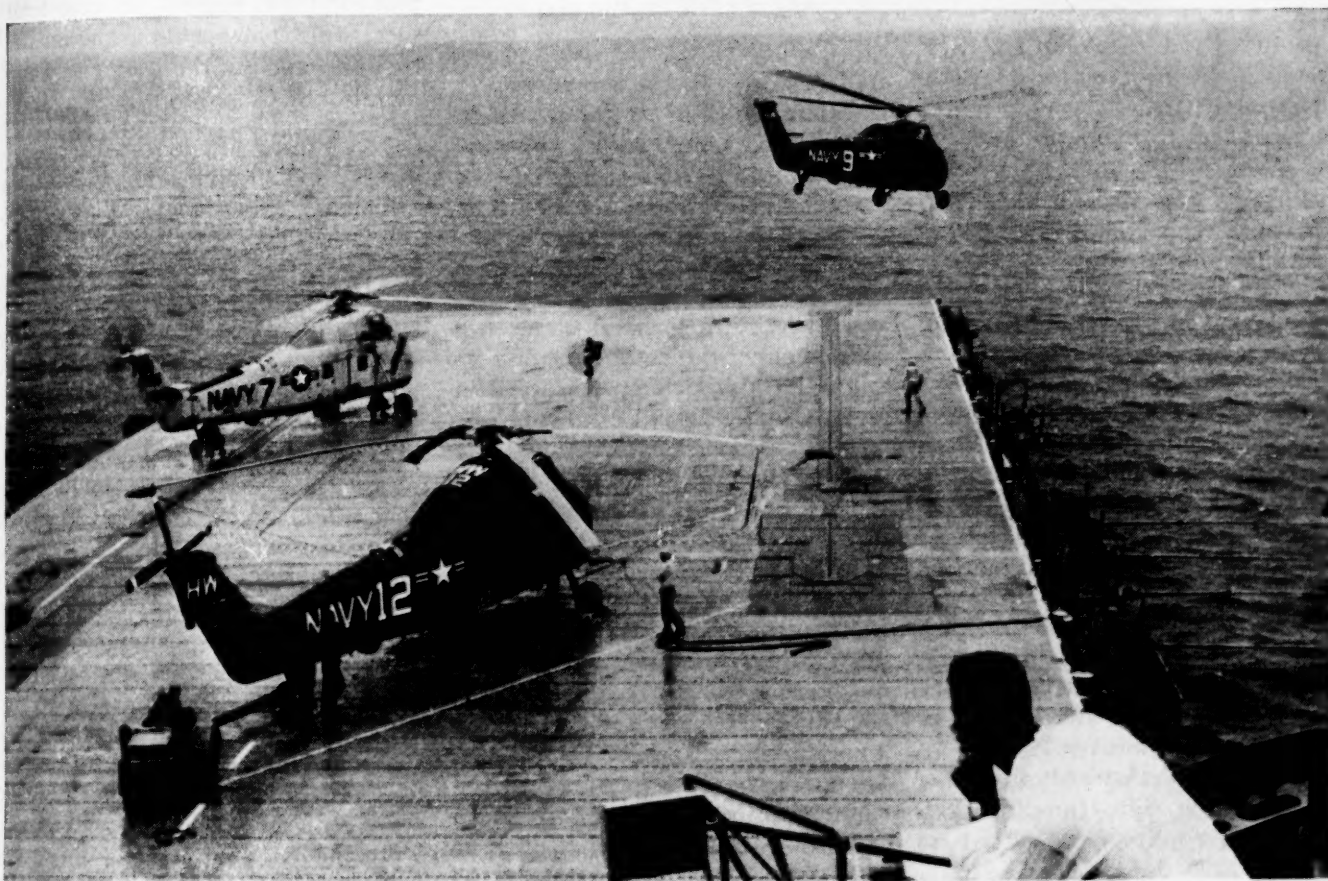
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PANMUNJOM

WILLIAM H. VATCHER, JR. 322 pages, illustrated. Frederick A. Praeger, Inc., NY. \$4.75

During the 2 years from 8 July 1951 to 27 July 1953 there were at Kaesong and Panmunjom 159 plenary sessions, 179 subdelegation meetings, 172 staff officer meetings, and 227 meetings between liaison officers.

The net product of all this negotiation was minuscule. The battle line was taken as the military demarcation line. A Commission was established to supervise the armistice and certain simple provisions designed to insure that neither side used the armistice to increase the strength of its forces. Finally, it was agreed that prisoners would not be repatriated by force if they still refused repatriation after 120 days of persuasion by representatives of their own side. The United Nations Command could have agreed to these terms at the outset.

Why did it take so long to do so little? Hard pressed though they were when they came to the conference table the Communists were prepared from the first to make the most of the armistice negotiations. By simply starting the talks they gained a considerable respite from military pressure. By getting, at a fairly early date, a tentative agreement on the military demarcation line—"the line on which the fighting would stop"—they got substantial assurance that the UN Command would not again undertake major military operations.

Having by these means reduced the military pressure to a level they could endure, the Communists were in a position to hold out for terms which would aid or, at the very least, would not hinder their long term politico military program. But 2 years of negotiation had not brought what were to the Communists satisfactory terms for the exchange of war prisoners.

In all likelihood it was the death

of Stalin which broke the deadlock. The Kremlin, busy with its internal affairs, needed some relaxation of international tensions. The war in Korea had rearmed the US and brought into being the NATO alliance. Better to liquidate the unsuccessful venture even if the terms were short of the best. Lenin's technique of taking a step backward in order to take 2 steps ahead. So the prisoner issue was compromised and the armistice signed.

Now, after nearly 5 years Professor William H. Vatcher's *Panmunjom* tells the story of the Korean Armistice negotiations. The author is a member of the political science faculty at San Jose State College, but his book is not too academic for the general reader. Vatcher was at Panmunjom himself and his principal sources were the conferees and the conference record. Emphasis is on what actually transpired within the conference tent. Thus his book reflects the somewhat localized attitudes of the negotiators and the atmosphere at the conference site.

This is at once a weakness and a strength. With the perspective of 5 years it is clear that much that went on within the conference tent was trivial and unimportant—just treading water until somewhere else a decision was reached which would bring about a change in the negotiations. On the other hand, the Communists did use the conference effectively and there is much to be learned by studying the record.

When the Communists wanted to negotiate it could be done expeditiously by staff officers working in executive session. When there was no desire to negotiate, but only to create that appearance, then executive sessions did not satisfy the Communist technique. So the matter would go to plenary sessions. Here there was no possibility whatever of true negotiation. In fact such sessions were the antithesis of negotiation. Each side tended to engage its

prestige in support of positions which could not then be easily abandoned. The Communists pulled out all the stops to discredit the UN Command and to create support for their own positions and it was in this sphere that the UNC negotiators were least successful. They could argue on the basis of logic but the illogic and immorality of Communist propaganda were beyond their experience.

Indeed, they were slow to discern that the Communists were not talking to them at all but beyond them to an audience incapable of judging the lack of merit of the Communist argument. Having seen this, the UNC negotiators attempted to reply more fully but they could never beat the Communists at this game for they were the prisoners of logic and of morality. Eventually, they learned that when there was no prospect of agreement it was preferable not to hold meetings.

After dealing with the background of events leading up to the negotiations Vatcher discusses the formulation of the agenda, the agreement on the demarcation line, the arrangements for supervision of the armistice and finally the prisoner of war issue. In a final chapter he discusses what he considers to be mistakes made by the UNC, techniques used by the Communists and the weaknesses displayed by them.

Although *Panmunjom* contains little that couldn't have been written 5 years ago the passage of time gives us greater confidence in what has been written. Moreover, the publication could scarcely be more timely for once again many well intentioned people are urging a summit meeting with the Soviet Union. Panmunjom proved that a plenary session is suitable for one thing—putting the stamp of approval on agreements which have been reached previously in unpublicized negotiation. Without such agreements a summit meeting promises no resolution of differences but only a crystallization of positions. This, of course, is precisely what is to be avoided if the objective is truly the resolution of differences.

Reviewed by Col J. C. Murray

Ed: The reviewer was liaison officer between the Armistice Delegation of the UN Command and the delegation of the North Korean Army and the Chinese People's Volunteers.

Marine Corps Gazette • May 1958

OUR NUCLEAR FUTURE,

Facts, Dangers and Opportunities

EDWARD TELLER and ALBERT L. LATTER.

184 pages, illustrated, Criterion Books, Inc., NY. \$3.50

The presidential election year of 1956 produced a new subject for debate. Perhaps it is not quite accurate to say that a new subject was produced, but few will argue that the importance of the subject was not brought before the American people in dramatic fashion. The subject: radioactivity. The debate: heated. The inference: impending disaster. The result: confusion and fear.

Are we, indeed, ensuring the annihilation of the human race by continuing to test nuclear weapons? What is radiation? How does it affect us?

Our leading politicians, educators and scientists have firmly and articulately formed themselves into 2 opposing camps: those who feel we must stop testing and those who feel we must not stop testing. The debate has not confined itself to the geographical boundaries of the US, but has been actively carried on in the homelands of our Allies. Quick to sense weakness or confusion in its enemies, Russia promptly injected herself into the argument, in order to exact the maximum propaganda value.

"The worry about our own actions will continue," say Edward Teller and Albert Latter. "It may grow as our power over nature increases. Against this worry there exist 2 weapons: understanding and courage. Of the 2, courage is more important but understanding must come first. . . . The scientist is put in the position where his voice is heard, not only in the specialized fields in which he is an expert, but also in the much more general matters which are affected by his discoveries."

Beginning with the structure of the atom, the authors introduce us to its separate parts, its actions and reactions. The explanation is so refreshingly presented, that even those with less than average knowledge of this fascinating world, will have no trouble understanding the lesson.

Having devoted the first few chapters to giving the reader a sufficient number of known facts to work with, the authors introduce us to some new observations not completely understood by the scientific world itself. One of these is the "neutrino" (just recently caught) and this strange little particle has upset one of the most unquestioned concepts about symmetry. Certain facts about the neutrino may turn out to be most important in the development of science.

Two fission products, which are continually referred to in debates on the subject of whether we should continue testing nuclear weapons or not, are strontium 90 and cesium 137. They undoubtedly present the most important danger to human life, and unfortunately, both are plentifully made in the fission process. In recent testimony before Congress, Dr. Teller made clear his position that we must continue testing. Has he then disregarded the danger of these 2 isotopes, or at least has he attempted to minimize the danger? Such charges would do a disservice to one of the world's brilliant minds, and would indicate a lack of understanding of the deliberate search for truth inherent in the true scientist. Both Dr. Teller and Dr. Latter have been accurate and factual in presenting the dangers we face from these unwelcome byproducts of fission. They ask only that "we approach the subject with an open mind and with as few emotions as is humanly possible."

Of particular interest to this reviewer, were some of the latter chapters of the book dealing with the cobalt bomb, the influence of nuclear tests on the weather, and the dangers involved in producing energy by nuclear reactors. We may always face danger when experimenting with the unknown, but we must always weigh these dangers against the possible benefits to be gained. It seems to me, that, in this book, the authors have given us the ingredients to weigh. Dr. Teller and Dr. Latter are both thoroughly familiar with the problems and opportunities of atomic physics and the dangers of radioactive fallout. Dr. Teller is best known for his work on the hydrogen bomb. Dr. Latter is a theoretical physicist who worked with Dr. Teller on the Air Force's Scientific Advisory Board.

And what of the "great debate — to test or not to test?" Who will make the decision? Say the authors, "The real source of important decisions in our country is the people. We believe that this is rightly so, and we believe that it is not proper if scientists take over any essential part of these decisions."

Reviewed by Maj C. B. Shropshire

Ed: This reviewer participated in the nuclear tests at Eniwetok during "Operation Greenhouse." The following year he commanded the Marine Detachment on "Operation Ivy," which returned to Eniwetok for further nuclear tests.

THE MEMOIRS OF GENERAL WILLIAM T. SHERMAN BY HIMSELF

2 Volumes combined (Vol. I, 405 pages, Vol. II, 409 pages). Indiana University Press. \$8.00

General Sherman proves that his talents as a soldier are equally matched by his ability as a writer. While primarily covering his exploits in the Civil War, the book includes Sherman's early experience in the gold rush days of Calif. He chronicles some highly entertaining episodes of the trials of a young

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army officer endeavoring to maintain his command in the face of the fantastic wealth of the day. In one such episode, an entire company deserted and the officers, led by Lt Sherman, had to ride out to bring them back. He became a banker of repute after leaving the Army and then returning East, he was offered the presidency of a small military school for boys in Louisiana. Today this school is Louisiana State University.

It was with considerable reluctance that the Louisiana school authorities accepted his resignation so that he might go North to offer his services to the federal government as war clouds gathered in early 1861.

This book does not provide detailed accounts nor map illustrations of the numerous campaigns in which its author participated; however, such accounts can be gotten from many other sources. On the other hand, it has the personal recollections, which history books lack, made by a brilliant officer, whose campaigns have served as models for many of the world's armies. Liddell Hart describes Sherman as "the first

modern strategist" because of his grasp of new conditions and his strategic indirect approach. As a foremost expert of tank warfare, Hart used Gen Sherman's campaigns as the basis for much of his writing and the German Army in turn embraced Sherman's ideas for deep strategic penetration in its operations through the Ardennes in 1940.

Sherman first won his spurs as a division commander at Shiloh. It was there also that he made his mark with Gen Grant. Their friendship and professional association was enhanced at Vicksburg in 1863 where Grant achieved his great victory in command of the Department of the Tennessee and MajGen Sherman, in command of the XV Corps, contributed notably.

But as the war dragged on, Sherman became increasingly obsessed with the idea that a march through the backdoor of the Confederacy—from Atlanta to the sea—would illustrate the vulnerability of the South and prove to its inhabitants that "war and individual ruin are synonymous terms."

This campaign required Sherman's 65,000-man Army to cut itself

loose from its supply line and move some 300 miles through hostile country, living off the land for a period of 40 days.

These operations resulted in the defeat of the Confederate forces commanded by Johnston, Hampton and Hood wherever they were met. The secret of the mobility achieved by Sherman in these operations is carefully described by the author and well worth reading by any student of modern warfare. His methods of cutting transportation and equipment to achieve mobility were copied by the British Army in its "Sherman March" training exercises and the subject of much diligent study by Gen Patton prior to the Normandy campaign.

That these operations hastened the end of the Confederacy is without question. Lee pointed out that his heavy rate of desertion in the closing days was due in large measure to the hopeless letters which his soldiers received from home.

That these operations made Sherman the most hated man in the South is probably also without question. The exigencies of the war made this inevitable in spite of the fact that his army was well disciplined and well led. Even more unfortunate was the fact that Gen Sherman was one of the most moderate men in the Federal Army in his attitude toward the South and its problems of reconstruction. Sherman's terms of surrender to Gen Johnston were so generous that he was accused of being a virtual traitor by Secretary of War Stanton, acting on behalf of the government, after President Lincoln's death. He was made to appear as a man who had won the war but lost the peace.

Though embittered by the shabby treatment he received from those whose chestnuts he had pulled out of the fire during 4 years of campaigning, Sherman remained a devoted citizen. In his final farewell to his troops he stated that "should a new war arise in our country, Sherman's Army will be the first to buckle on its old armor and come forth to defend and maintain the Government of our inheritance."

Reviewed by LtCol H. W. Edwards

Ed: This reviewer is a member of the Washington "Civil War Round Table." An instructor at Senior School he was Head of the Historical Branch HQMC.

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IN BRIEF

The Department of the Navy has requested the Marine Corps GAZETTE to make the following announcement:

"A major book on D-day at Normandy is currently being prepared by Cornelius Ryan for Simon and Schuster book publishers and the *Reader's Digest*.

All personnel who participated in the Invasion of Normandy up to and including 6 June 1944, are urged to notify Miss Frances Ward, *The Reader's Digest*, 230 Park Ave., New York City. Personal interviews with selected participants will follow. Cooperation is encouraged as a means of helping to tell the Marine Corps' part in the Operation."



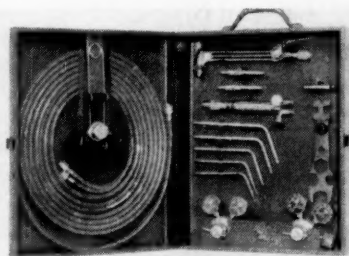
The Marine Corps Association sword was presented to 2dLt William S. Hamel, the honor graduate of 4-57 Basic Class, by LtGen M. B. Twinning, Commandant Marine Corps Schools, Quantico, Va.



Lt Hamel graduated in 1957 from the US Naval Academy. He has been assigned to the 2d ITR at Camp Pendleton, California, for duty in the infantry field.

Lt Hamel is the son of Col and Mrs. L. S. Hamel. Col Hamel is the Commanding Officer of the Marine Barracks, Naval Shipyard, Bremerton, Washington.

A new packaged welding outfit, the Redi-Set, has been developed by the K-G Equipment of Allentown, Pa., an Air Products subsidiary. The unit combines high performance, versatility and dollar savings for those with occasional welding and cutting jobs.



The 12-pound set includes all the necessary equipment for welding, cutting, brazing, soldering and heating. No larger than an ordinary briefcase, the set includes an oxygen regulator, an acetylene regulator, a quickly converted combination welding and cutting torch, assorted welding and cutting tips, 25 feet of twin welding hose, necessary adapters, goggles, lighter and wrench and instruction books.



Forty Marines stationed at MCSA, Philadelphia, each donated a pint of blood to a 4-year-old boy battling for his life after an accident which left 80 per cent of his tiny body covered with third degree burns.

In a matter of minutes after learning about the unfortunate youngster, these Marines (below) were on a bus headed for the hospital.



A new entry into the military vehicle field, built by the makers of Mercedes-Benz, was recently demonstrated at the rugged proving area of the Marine Corps Equipment Board at Quantico, Va.



Known as the UNIMOG, this new vehicle is light, weighs from 3,300 to 18,000 pounds depending on the number of crewmen, type armament and horsepower. It is capable of carrying a 1¼-ton payload or pulling 30 times its own weight. There are 5 models of UNIMOG (two of which are shown here) all powered by diesel engines ranging from 34 to 155 horsepower.



The S-H type (bottom picture) can be armored, fitted with a turret and used as a hit-and-run or patrol vehicle. This small armored car has a top speed of 60 miles per hour over smooth roads and cruises about 30 miles per hour over rough terrain. It can be equipped with a 40mm anti-aircraft gun or with a 106mm recoilless rifle.



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FRED MAJDALANY

An account of a patrol against the Germans in North Africa in 1943. The author, who also wrote *The Battle of Cassino*, was an infantry captain in the North African operations.

Ballantine Books, NY.

Paperbound. 35¢

SAWDUST EMPIRE

HOWARD BRIER

In the course of this book about Oregon and Washington the author deals with a great variety of subjects — booming industries, cities and towns, rivers and dams, lumber and forests, national parks, apples, fish, magnificent scenery, Indians, driftwood beaches and tidewater resorts, and the relics of pioneer days. He writes of lumbering operations, of cattle and irrigation, of the construction of dams and the building of airplanes, of water power and atomic power, of oil and bridges and tourism.

Alfred A. Knopf, NY.

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COMPANY K

WILLIAM MARCH

A gripping account of an infantry company during WWI. The story is told by having each member of the company tell a portion of it in his own words. The author enlisted in the Marines in 1917 and participated in the major actions in France. He was wounded and gassed, and received the Distinguished Service Cross. Originally published in 1933, this is a paperback reissue.

Sagamore Press, Inc., NY.

\$1.25

THE ARCTIC YEAR

PETER FREUCHEN and FINN SALOMONSEN

In this distinguished and unusual collaboration, a famous arctic explorer and an eminent Danish naturalist present a month-by-month account of life in the Arctic Zone. This volume introduces in detail and anecdote the animal and plant life of the Arctic as determined by the climate and geography of a little known section of the world that is now of tremendous strategic importance. Peter Freuchen lived with the Eskimos through arctic winters and participated in many trips of arctic exploration. This book was completed just before his death.

G. P. Putnam's Sons, NY.

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MATHEMATICS FOR THE MILLIONS

LANCELOT HOGGEN, F.R.S.

This is the book that takes the mystery out of mathematics. The author scraps pedagogic methods. He is not concerned with classroom exercises, but with practical uses. Taking only elementary knowledge for granted, this book leads through the whole course from simple arithmetic to calculus. For the first time the subject is treated simply as a language — the language of size. What makes this book different is that Mr. Hogben goes beyond cold abstractions and gives reasons for everything; he not only tells how a problem is solved, but why it is solved that way.

W. W. Norton & Co., NY.

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COMMUNISM ON THE DECLINE

GEORGE C. GUINS

There are no predictions here, but the author has placed into logical order a collection of facts from which he concludes that Communism has reached a stage of progressive decay and degeneration. The decay of Communism starts when people begin to understand that Communism is based on illusions. On the ground of the confessions of the Soviets themselves and factual data, Professor Guins concludes that this is what actually happens with Communism and at this very moment it is approaching its final stage.

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THE SEIZURE OF POLITICAL POWER

FELIKS GROSS

This is a study of sociology and history of violent transfer of power. The focus is on problems of how power was seized. The core of the volume is a study of Russian revolutions since 1825, but the volume is not limited to Russian material. Empirical case studies cover coups and revolutions in Latin America, Egypt, China, Italy, Germany, France and other countries.

Philosophical Library, NY.

RECOLLECTIONS OF A CONFEDERATE STAFF OFFICER

BGen G. MOXLEY SORREL, CSA
Edited by Bell Irvin Wiley

BGen Sorrel, a Georgian, served on the staff of Gen James Longstreet and finally became Chief of Staff of the I Corps, Army of Northern Virginia. In this exalted place he had unusual opportunities to know many high-ranking Confederates and to have inside information on command decisions made at Corps and Army Headquarters. In his Editor's Introduction, Professor Wiley offers a good sketch of the author and evaluates the book's place in Civil War literature.

McCowat-Mercer Press, Jackson, Tenn. \$5.00

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This is a serious attempt to present in elementary terms an up-to-date and comprehensive account of electronic devices and their applications. The publishers believe that anyone having a sound knowledge of elementary electricity and magnetism will be able to obtain from the book a clear idea of the nature and scope of the subject. The book should enable the more curious reader to progress to less elementary and more specialized literature.

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A condensation and explanation of the fundamentals of the Uniform Code of Military Justice, designed as a textbook to supplement the Manual for Courts Martial and the Naval Supplement. Written for use in the US Naval Academy course in Military Law.

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J. G. CROWTHER and R. WHIDDINGTON

A detailed account of science's contribution to the war effort, based on the official archives and documents assembled by the Scientific Advisory Committee to the British Cabinet. Among the basic topics covered are radar, the atomic bomb, operational research and science at sea. Mr. Crowther is chairman of the Association of British Science Writers and Mr. Whiddington is head of the Department of Physics, University of Leeds.

Philosophical Library, NY.

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1. Contestants may write on any subject of military interest but essays may not exceed 5,000 words and they must be original.
2. They must be typewritten, double-spaced, on paper approximately 8 x 11, and must be submitted in triplicate.
3. The name of the author shall not appear on the essay. Each essay heading shall contain an identifying phrase consisting of the last 5 words of the essay. This phrase shall appear:
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4. Essays and identifying envelope must be mailed in a sealed envelope marked Prize Essay Contest Group (I, II, III, IV as appropriate) to the Secretary-Treasurer, Marine Corps Association, Box 1844, Quantico, Virginia.
5. Essays must be received by the Secretary-Treasurer prior to 1 October 1958.

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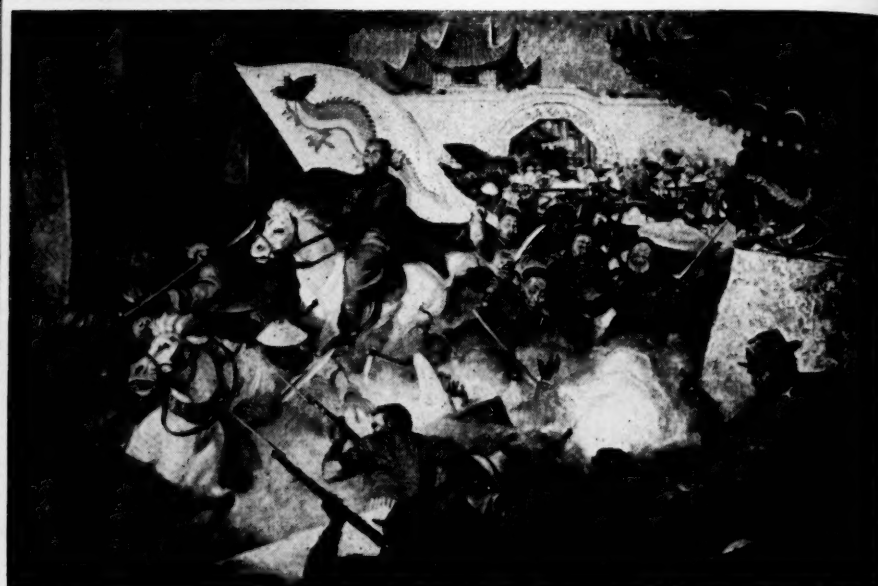
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